FINAL REPORT OF GEOTECHNICAL INVESTIGATION

Rhode Island National Guard
Maintenance Hanger
Quonset Air National Guard Base
North Kingston, Rhode Island

Prepared by:
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March 28, 2001

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1.0 INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed new Maintenance Hanger at the Quonset Air National Guard Base in North Kingston, Rhode Island. The facility will be located at the northwest corner of the intersection of Flightline Drive and Hercules Drive on the base. The proposed development and the project location are shown on the Site Plan, Figure 1.

2.0 PROPOSED DEVELOPMENT

The project consists of a new maintenance hanger that will be approximately 304 feet long and 190 feet wide. The first Phase of the hanger will consist of the main service bay and a row of maintenance rooms along the rear wall. Phase 2 will consist of additions to each side of the Phase 1 structure that will be occupied by machine shops. A second story to the south addition will contain classrooms and offices.

The total maximum downward reaction at the rigid frame columns of the new hanger is expected to be approximately 283 kips, with column spacing at 25 feet. Maximum uplift reaction is expected to be approximately 92 kips. Maximum floor loads for the shop and office areas are expected to be 300 psf. The maximum tire load for an empty airplane is expected to be 17 kips, with distributed jacking load of 350 psf. The total gross airplane weight is expected to be 175,000 pounds.

The new hanger will have new paved parking areas to the north and south. Two new above ground fire water storage tanks and a pump station will also be constructed to the south and west of the main hanger building. Each water tank will have a capacity of 90,000 gallons and will have a concrete ring foundation. The pump house will be constructed with CMU walls and concrete slab with below grade pits in the corners. The structure will have a total load of about 100 psf.

3.0 PURPOSE

The purpose of our investigation is to explore the subsurface conditions at the site in order to develop recommendations for site preparation and foundation design. This report is based on our borings and laboratory testing plus data from our previous geotechnical investigation for improvements to the nearby Squadron Operations Building. We previously submitted a preliminary report dated January 29, 2001, to provide geotechnical information for planning and preliminary structural design. This final report presents our final conclusions and recommendations that either supercede or supplement those in our preliminary report.

4.0 SCOPE OF WORK

Our scope of work for this project has consisted of the following tasks:

1. A field exploration program that consisted of drilling, logging and sampling eight deep borings within the proposed hanger location to depths ranging from 38 to 50 feet, except one boring, B-5 that met refusal at a depth of 20 feet. Two deep borings were drilled at the proposed water tank and pump station locations to depths of 46 to 50 feet. Six shallow borings were drilled in the proposed parking areas and hanger apron entrance to depths of about 17 feet.

2. Engineering analyses utilizing the results of the field exploration and our previous investigation of the Squadron Operations Building to develop site preparation and foundation design recommendations.

3. Preparation of this report that summarizes the results of our field exploration, laboratory testing, engineering analyses, and recommendations for the proposed project. The report includes the following:

   - Description of surface and anticipated subsurface conditions.

   - Results of subsurface explorations with a description of the soil and groundwater conditions encountered.

   - Recommendations for earthwork, including site preparation, excavation, and the placing of any required compacted fill.

   - Suitability of on-site soils for use in compacted fills, and recommendations for borrow material, if required.

   - Foundation recommendations including:

     -Allowable vertical bearing capacities and settlement characteristics for the anticipated building loads.

     -Lateral load design parameters for foundations, e.g., the allowable frictional and passive values for bearing materials.

     -Recommendation of remedial measures for any special problems encountered.

5.0 FIELD EXPLORATION

Between January 25 and February 16, 2001, a total of ten deep borings and six shallow borings were excavated by our subcontractor Enviro-Tech Drilling, Inc. A representative from our office directed the drilling operations and obtained soil samples for laboratory testing. Logs of the borings are presented in Appendix A. Boring locations are shown on the Site Plan, Figure 1.

6.0 LABORATORY TESTING

Our laboratory testing consisted of sieve analyses on six samples obtained from the borings to aid in classification, plus one California Bearing Ratio (CBR) test on a bulk sample of near surface soils for pavement design. A Proctor Compaction curve was also performed on this bulk sample to provide information on maximum dry density and optimum moisture content values for the CBR test, which was performed on a remolded sample compacted to 95% relative compaction to simulate probable pavement subgrade conditions during construction. Our laboratory test results are included in Appendix A.

7.0 SITE CONDITIONS

SURFACE CONDITIONS

The site is currently vacant and covered with grass. The terrain is relatively level, except for a tree covered landscaping mound at the north portion of the site where a parking area is proposed. A paved roadway extends along the east and north sides of the hanger location. An underground storm drain crosses the hanger location.

SUBSURFACE CONDITIONS

EARTH MATERIALS

Each boring initially encountered a surface layer of medium dense sand that extended to depths of about 3 to 4 feet. Below this surface layer, each boring except B-6 and B-15 encountered fine to medium grained sand that was loose to very loose and wet and extended to a depth of about 15 to 18 feet. Borings B-6 and B-15 encountered medium dense to dense fine to coarse sand between the surface layer and a depth of about 15 feet. In seven of the 16 borings, primarily those in the southern portion of the site, the loose sand was underlain by a layer of soft peat between depths of 10 and 15 feet. The sand encountered within the upper 10 to 18 feet is likely to be previously placed fill.

Below a depth of 15 to 18 feet, each boring encountered native fine sand and silty sand that varied in consistency from medium dense to very dense. Boring B-1 met refusal at a depth of 38 feet; Borings B-4 and B-7 met refusal at a depth of 48 feet. Shale fragments were encountered at refusal depth in Boring B-4. Boring B-5 met refusal at a depth of only 20 feet; however, this was

most likely due to an isolated cobble or boulder. These subsurface conditions are similar to those encountered at the Squadron Operations Building.

Detailed descriptions of the soils encountered are presented on the boring logs in Appendix A.

GROUNDWATER

Groundwater was encountered in each boring between depths of 6 to 9 feet, with groundwater at 6 feet in most of the borings. Groundwater levels at the site are expected to fluctuate due to changes in water level and seasonal variations in rainfall, temperature, irrigation, tidal influence, and other factors.

8.0 CONCLUSIONS AND RECOMMENDATIONS

GENERAL

It is our opinion, based on our field exploration, laboratory testing, and engineering analyses, that the site is suitable for the proposed construction when treated in accordance with the recommendations in this report. The primary geotechnical concern is settlement caused by consolidation of the soft peat and loose sands.

The layer of peat and portions of the existing fill are soft and loose and susceptible to compression and consolidation upon the application of structural loads that could result in significant settlement of the ground surface and any overlying structures. These conditions resulted in the nearby Squadron Operations building being constructed on timber piles driven into the medium dense to dense native sands to transfer the structural loads through the compressible zone, thus avoiding the triggering of any significant settlement. Since the project site has similar subsurface conditions, a similar pile foundation is a feasible solution for the proposed hanger and water tanks. To avoid problems with differential settlement, we recommend that the hanger floor be constructed as a structural slab supported by the pile foundation.

Other methods of reducing potential settlement include overexcavation of all loose and soft soils and replacement with compacted engineered fill, or ground modification to strengthen and reduce the compressibility of the soft and loose soils. These options would allow the use of shallow footings rather than piles. Overexcavation is not recommended since the depth of removal would extend well below the groundwater table requiring extensive dewatering and stabilization of the bottom. This option would likely be significantly more expensive than a pile foundation.

Ground modification methods that would be appropriate for the site conditions include jet grouting, vibro-replacement, or soil mixing. Each method involves the injection of grout or stone into the subsurface to strengthen the soft and loose soils. These methods involve specialized equipment and experienced specialty contractors, and are likely to be significantly more expensive than piles.

The proposed pump house will impose structural loads significantly less than the hanger or water tanks, so piles may not be necessary to reduce settlements. Depending on the depth of the structure, the loads may be no greater than the existing overburden stress of the soil. The main concern would be the achievement of a stable bottom of the structure, since it will likely be founded in loose sandy soil close to or below the water table. We can provide further recommendations for the pump house foundation after more design details become available.

SEISMIC DESIGN

For seismic design in accordance with the BOCA Building Code, the recommended site soil profile type is Type S3, giving a site coefficient S=0.15. The effective peak velocity-related acceleration (Av) and the effective peak acceleration (Aa) should both be taken as 0.12 g.

LIQUEFACTION

Liquefaction potential has been found to be the greatest where the groundwater level is shallow and loose fine sand occurs within 50 feet of the ground surface. Liquefaction potential decreases with increasing grain size, clay and gravel content, and soil density, but increases as the seismic ground acceleration and duration of shaking increases. The loose sandy fill in some areas of the site is partially below the ground water table and could be susceptible to liquefaction in a strong earthquake; however the use of a pile foundation will essentially eliminate the liquefaction hazard for the proposed buildings.

SITE PREPARATION AND GRADING

General

This section pertains to demolition, site preparation, incidental buried utility relocation or installation, and grading and excavations required for the project.

Clearing and Grubbing

The site should be cleared of all debris and unsuitable or deleterious materials, or structures that conflict with the proposed construction. Utilities in conflict with the proposed construction should be relocated or removed from the site. Excavation should be performed as necessary to remove any loose or disturbed soils, if encountered. The resulting excavations or voids should be treated in a manner acceptable to the geotechnical consultant.

Subgrade and Preparation of Fill Bottoms

After overexcavation, the exposed bottoms should be observed by the geotechnical consultant to determine if additional overexcavation is required. After the bottoms are approved by the geotechnical engineer, they should be compacted to a minimum relative compaction of 95% based on ASTM D1557. If the bottoms cannot be compacted due to saturated conditions, the bottoms should be covered with a layer of stabilization geotextile followed by a minimum 2 foot

layer of crushed stone to create a stable subgrade before placement of engineered fill. A second layer of geotextile should be placed over the crushed stone before placement of engineered fill. The stabilization layer should be observed by the geotechnical consultant before placing the engineered fill to determine whether a stable subgrade has been achieved, and to assess whether additional stabilization measures are required, such as placement of a layer of additional oversize material or more geotextile.

Fill Material Requirements

The onsite and any import materials used as engineered fill should consist of inorganic, well-graded non-expansive soils, and have a maximum size of six inches. The existing fill should be suitable, as long as any debris or organic material is removed. The peat beneath the fill is not suitable for fill.

Fill Placement and Compaction Requirements

Soil used as engineered fill should be moisture conditioned to near optimum moisture content, placed in 12 inch thick loose lifts and compacted to at least 95 percent of the maximum dry density as determined by ASTM D 1557-91. Crushed stone should be placed in layers not more than 2 feet thick and spread evenly to achieve compaction.

Types and Frequency of Field Tests for Engineered Compacted Fill

The geotechnical consultant should be retained to observe and test all engineered compacted fill and backfill placement. The types and frequency of in-place field density tests during placement of engineered compacted fill and frequency of laboratory determinations of maximum density of fill materials should generally be left to the discretion of the geotechnical consultant.

As a general guideline, at least one in-place field density test should be performed for every two feet vertical of fill placed in a single operation, or for every 500 cubic yards of fill placed in a single operation, or for each soil type used, or each single compaction operation. A laboratory Compaction Characteristics Test (ASTM D 1557) will be required when there is a change in the compaction characteristic of the on-site material or import material being used.

Utility Installations

Sides of trenches should be sloped or shored in accordance with OSHA standards. Properly designed trench shields may be used in lieu of shoring. We recommend that excavations less than five feet deep be sloped or protected with portable trench shields. The on site sandy fill soils are susceptible to possible caving, which represents a potential hazard to workmen hunched over for installations of conduits, even in shallow excavations.

Backfill under, around and over buried conduits should be compacted to at least 90 percent of the maximum dry density as determined by ASTM D 1557. Buried utility lines should be provided with bedding as recommended by the project civil engineer, or the utility company or agency that

has jurisdiction. Excavation should be performed as necessary to remove all loose and disturbed soils and unsuitable fill materials

PILE FOUNDATIONS

GENERAL

The proposed hanger and water tanks should be supported by drilled or driven piles that derive vertical support in the dense native sands beneath the fill and peat layers. Feasible pile options include driven timber piles, driven steel pipe piles, cast-in-place reinforced concrete drilled piles, or pressure-injected footings (PIF), otherwise known as Franki Piles. Timber piles are typically the least expensive type; the one concern would be protection against rot above the water table. Because of their taper, timber piles do not provide much uplift capacity. Steel pipe piles provide higher downward capacity per pile but at higher cost. Steel piles would need protection against corrosion. Drilled cast-in-place concrete piles may need to be cased resulting in significantly higher cost than the driven piles. Steel pipe piles and drilled cast-in-place piles also do not provide much uplift capacity because of the limited adhesion to the steel pipe or casing.

Franki piles are driven cast-in-situ concrete piles that have enlarged bases that can provide high downward and uplift capacities. They are constructed by driving zero-slump batches of concrete through a steel casing with an internal hammer that densifies the surrounding soil. The casing is typically removed as the pile is formed, and steel reinforcement is added if needed, especially if uplift capacity is required. Downward vertical capacity is a function of the diameter, hammer energy, and concrete batch volume. Recommended maximum working loads range from 50 to 300 tons. Once a suitable bearing layer is encountered, the pile installation method can be adjusted to achieve the desired allowable capacity. Uplift capacities are a function of the volume and depth of the enlarged base. Franki piles are the most effective in fine grain sands and silty sands.

Franki piles may be the best choice for the hanger columns due to their relatively high downward and uplift capacities.

The floor of the hanger should consist of a structural slab that is supported by piles. Since no uplift resistance is required and loads are relatively light, timber piles are probably the best choice to support the floor slab.

The water storage tanks should be constructed on mat foundations supported by piles. Timber piles or Franki piles may be appropriate depending on the structural loads. Similarly, either pile type may be suitable for the pump house, if piles are determined to be required, and depending on the load conditions.

AXIAL CAPACITY

Timber piles are typically limited in capacity to 25 to 30 tons. The capacities of steel pipe piles and drilled cast-in-place piles are limited by the strength of the steel and concrete. Recommended allowable downward axial and uplift capacities of timber piles, steel pipe piles,

and drilled cast-in-place concrete piles are plotted verses depth on Figures 2, 3, and 4, respectively. The capacities for steel pipe piles assume closed-end driven piles, and the capacities for drilled piles assume they are cased for their full length. The allowable downward capacities were calculated applying a safety factor of 3 for dead plus live loads. The weight of the piles may be neglected. Uplift capacities were calculated assuming a safety factor of 2 for wind and seismic loads in combination with dead and live loads.

Standard Franki piles with a nominal shaft diameter of 22 inches should be able to achieve the maximum allowable downward axial load of 200 tons with the base constructed in the native dense sands at depths of 20 feet or deeper. This assumes a safety factor of 3 for dead plus live loads. Allowable uplift capacity is dependent on the pile depth and size of the base. Assuming a base volume of 10 cubic feet, allowable uplift capacities of 24 tons and 72 tons should be achievable for pile depths of 20 feet and 25 feet, respectively. These values assume a safety factor of 2 for dead plus live plus seismic/wind loads. For the site conditions and loading requirements, uncased zero-slump concrete piles with steel reinforcement are recommended.

The allowable bearing values are based on the soil conditions, and the structural design of the piles may govern the final design dimensions. Concrete strength and steel reinforcement shall be the responsibility of the project structural engineer.

The total settlement of the proposed pile foundation is not expected to exceed one-half inch. Differential settlements between two adjacent similarly loaded foundations are not expected to exceed one-quarter inch. Settlements are expected to occur shortly after vertical loads are applied.

PILE INSTALLATION

Driven piles should be spaced no closer than three times the diameter to achieve the full capacity and to avoid conflict with adjacent piles. We recommend that at least one downward and one uplift load test be performed on each type of pile to confirm design capacities and to develop final installation criteria. Our firm should be allowed to review the pile design and hammer submittal, monitor the load tests, and should provide fulltime monitoring of the pile driving to determine if the design capacities are achieved.

Driven piles should be predrilled through the upper dense fill layer. Drilled piles will probably need to be cased through the loose sandy fill to avoid caving.

PASSIVE CAPACITY

The allowable lateral passive capacity of piles bearing against the existing fill and native soils may be taken as equivalent to that of a fluid weighing 250 pounds per cubic foot (pcf), to a maximum value of 2,500 psf. These values incorporate a factor of safety of 2.0 and consideration of the "end affect", and should conform to the minimum spacing requirements presented herein. These values may be increased by one-third for wind or seismic loads.

DRAINAGE

The site should be graded to provide for positive drainage away from structures in accordance with the building code and applicable local requirements. Graded pads should slope no less than 2% to drain. Paved areas should slope at least 1% to drain. Concentrated roof and surface drainage from the site should be collected in engineered, non-erosive drainage devices and conducted to a safe point of discharge. The site drainage should be designed by a civil engineer.

PAVEMENT DESIGN

We developed recommendations for pavement design based on information you provided and our field and laboratory testing. The existing near surface soils are silty sands that have a CBR value of 23 when compacted to 95% relative compaction based on ASTM D 1557. We used this value for our recommendations assuming there will be no significant cuts or fills in the pavement areas, or that no imported soils will be used in these areas; otherwise our recommendations may need modification.

The paved parking areas planned for the north and south sides of the hanger should consist of a 3 inch layer of asphalt concrete over 8 inches of aggregate base. The aggregate base and upper 12 inches of subgrade should be compacted to a minimum 95 % relative compaction.

We recommend that the concrete apron entrance to the hanger consist of a 12-inch concrete slab over a 4-inch aggregate base layer, assuming an allowable concrete working stress of 450 psi. The base layer and upper 12 inches of subgrade should be compacted to a minimum 95 % relative compaction.

PLAN REVIEW

The geotechnical consultant should be retained to review grading and foundation plans and specifications to ascertain conformance with site conditions and recommendations presented herein.

TESTING AND OBSERVATION

The geotechnical consultant should be retained to perform on-site construction observations and testing to ascertain that conditions correspond to the findings and conclusions presented herein and that construction conforms generally to the recommendations presented herein. The geotechnical consultant should be called out for testing and observations as indicated in this report and at least for the following:

Full time observation of pile driving operations.

Inspection of all subgrade and fill bottoms following excavation, before scarifying, recompaction and any fill is placed.

Continuous inspection of all temporary construction excavations located closer to existing structures than one and one-half times the depth of excavation, and inspection of all other

temporary construction excavations following excavation, before beginning work near the sides of excavation.

Testing and inspection of all fill placement as discussed under the subsection **Types and Frequency of Field Tests for Engineered Compacted Fill.**

Inspection of all foundation excavations before rebar or concrete is placed.

It is the responsibility of the contractor to coordinate all inspections and testing required by this firm or by other regulatory agencies. We should be should be given at least 48 hours notice that construction is commencing and no less than 24 hours notice of required geotechnical tests and/or inspections.

9.0 LIMITS OF INVESTIGATION

The analyses, conclusions, and recommendations contained in this report are based on site conditions as they existed at the time of our investigation and further assume that the explorations to be representative of the subsurface conditions throughout the site. No warranty is made nor should any be construed that unforeseen geotechnical or geological weakness may not exist between exploratory points or below the depths explored. If different subsurface conditions are observed during construction, we should be promptly notified for review and reconsideration of our recommendations.

This report was prepared for the exclusive use and benefit of the owner, architect, and engineer for evaluating the design of the facility as it relates to certain geotechnical aspects. It should be made available to prospective contractors for information on factual data only, and not as a warranty of subsurface conditions included in this report.

If the proposed development is substantially modified from that which is discussed herein under **Proposed Development,** we should be retained to review the new proposed development to ascertain whether our findings, conclusions, and recommendations remain applicable.

Site conditions can change with time. If more than 18 months have passed since the submittal of this report, we should review the site to determine if our conclusions and recommendations are still applicable.

We recommend that Northeast Engineers & Consultants be retained and given the opportunity to review those portions of the plans and specifications that pertain to foundations and earthwork to ascertain whether they are consistent with the recommendations of this report, and to inspect construction, particularly foundations, shoring, site grading, and earthwork to ascertain whether site conditions are consistent with those described in this report, and that construction conforms to our recommendations. The review of plans and specifications, and construction monitoring and testing by Northeast Engineers & Consultants is an integral part of the conclusions and recommendations made in this report, and if others are retained for these services, the client will be assuming responsibility for any potential claims that may arise during or after construction.

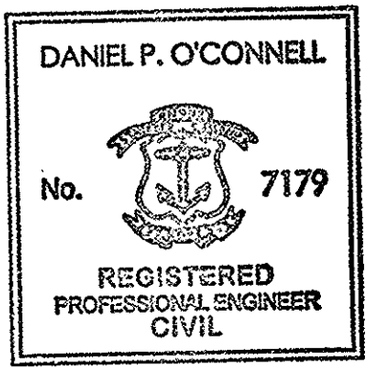
The services described in this report include professional opinions and judgments based on the data collected. Our investigation was performed using the standard of care and level of skill ordinarily exercised under similar circumstances by reputable geotechnical engineers currently practicing in this or similar localities. No other warranty, express or implied, is made as to the conclusions and professional advice included in this report.

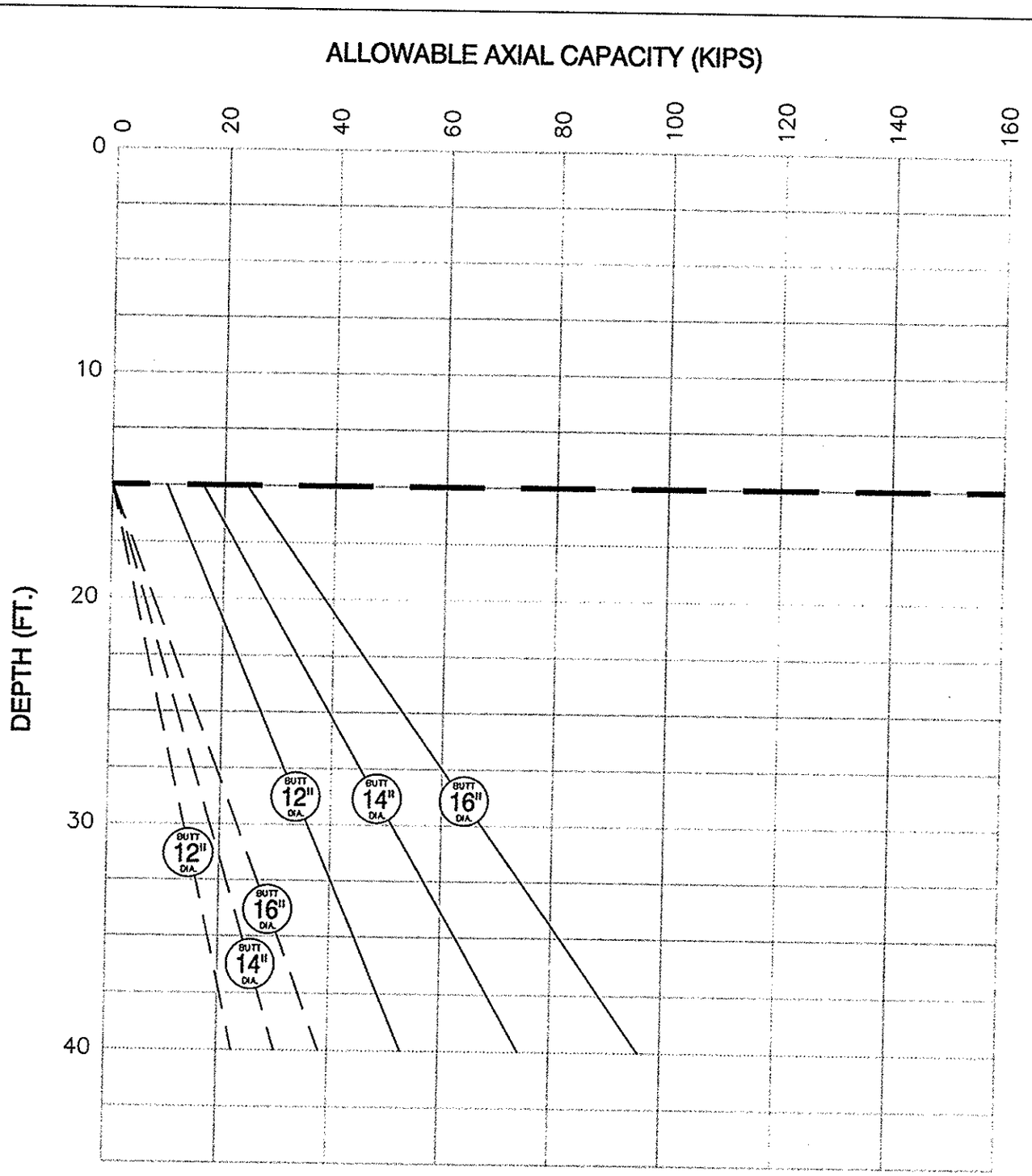
We would be pleased to provide you with additional consultation services through the design and construction phases of this challenging project. If you have any questions concerning this report, please contact us.

Respectfully submitted,

NORTHEAST ENGINEERS & CONSULTANTS, INC.

DANIEL P. O'CONNELL, P.E., G.E.
Chief Geotechnical Engineer





LEGEND

DOWNWARD SF=3 D+L ——————

UPLIFT SF=2 D+L+W — — —

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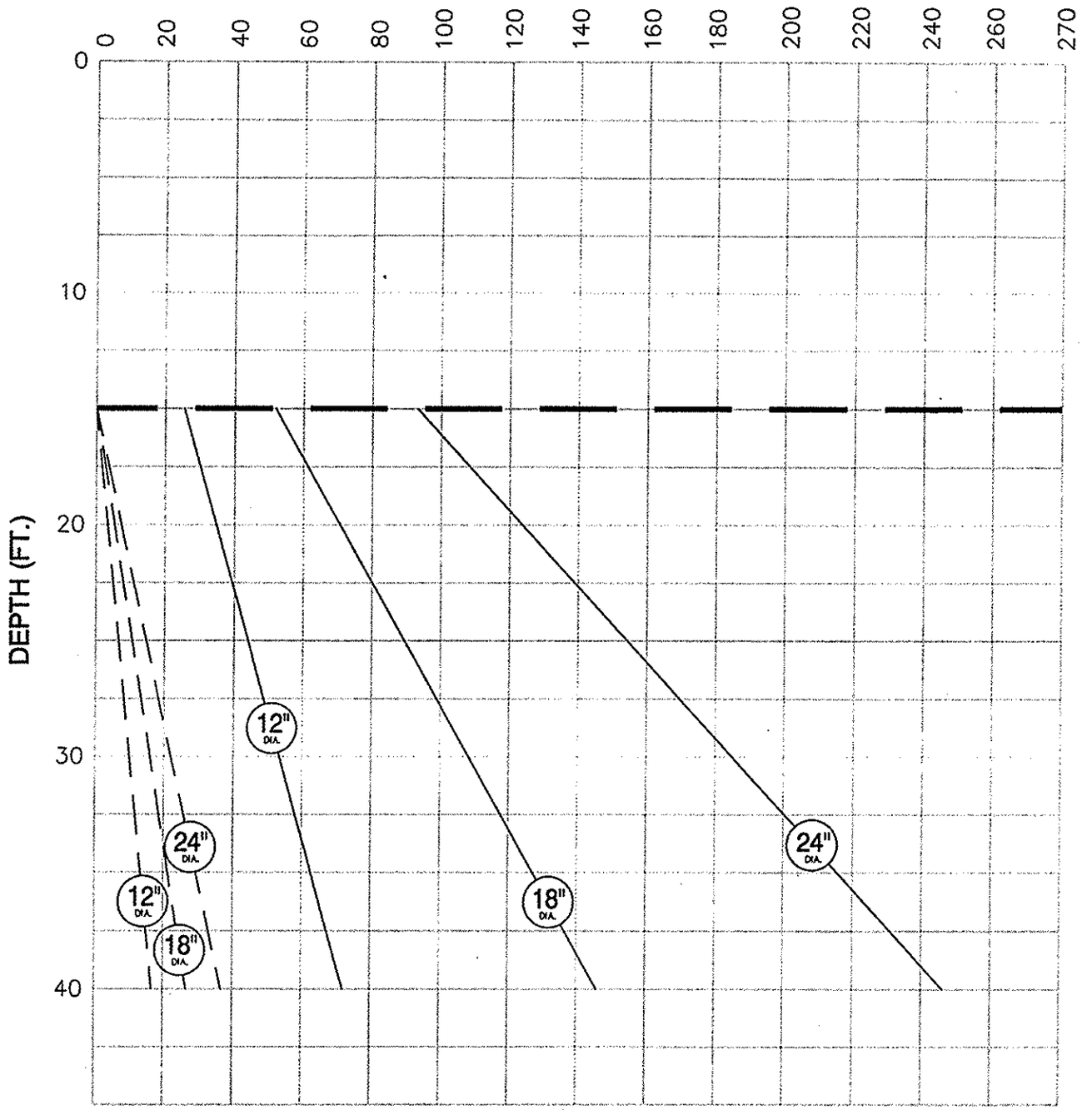
A KNOWLEDGE CORPORATION℠
42 VALLEY ROAD
MIDDLETOWN, RHODE ISLAND 02842
TEL: (401) 849-0810 FAX: (401) 846-4159

NEW MAINTENANCE HANGER RHODE ISLAND NATIONAL GUARD QUONSET AIR NATIONAL GUARD BASE NORTH KINGSTOWN, RHODE ISLAND	TIMBER PILES
THE BENHAM GROUP	
DATE: 28MAR01	FIGURE NO. 2 of 4

ALLOWABLE AXIAL CAPACITY (KIPS)



LEGEND

DOWNWARD SF=3 D+L ———————

UPLIFT SF=2 D+L+W — — —

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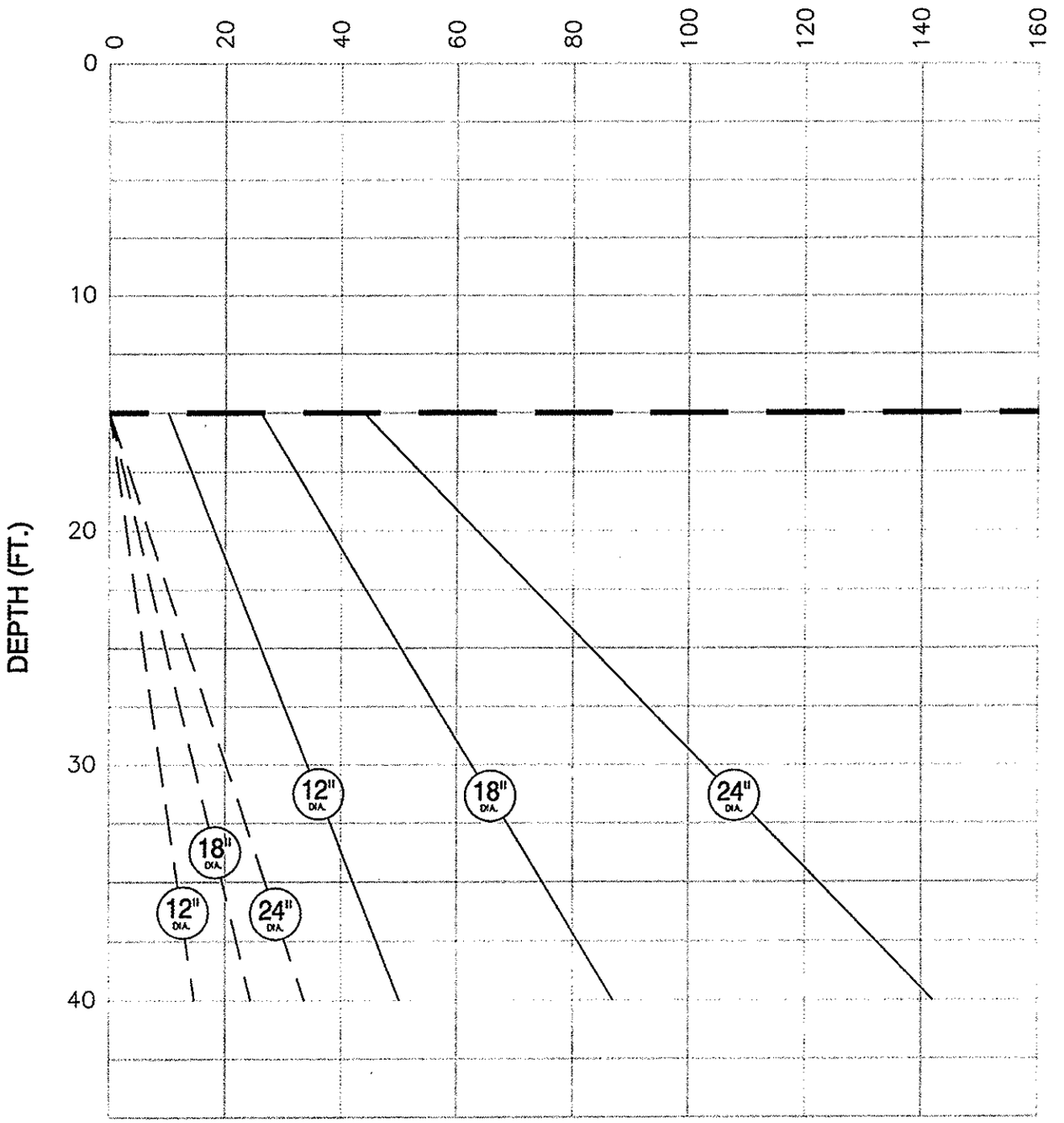
NEW MAINTENANCE HANGER
RHODE ISLAND NATIONAL GUARD
QUONSET AIR NATIONAL GUARD BASE
NORTH KINGSTOWN, RHODE ISLAND

STEEL PIPE PILES (CLOSED END, DRIVEN)

THE BENHAM GROUP

DATE: 28MAR01

FIGURE NO. 3 of 4



LEGEND

DOWNWARD SF=3 D+L	————	UPLIFT SF=2 D+L+W	— — —

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NEW MAINTENANCE HANGER RHODE ISLAND NATIONAL GUARD QUONSET AIR NATIONAL GUARD BASE NORTH KINGSTOWN, RHODE ISLAND	**DRILLED CAST-IN-PLACE CONCRETE PILES**
THE BENHAM GROUP	
DATE: 28MAR01	FIGURE NO. 4 of 4

10.0 APPENDICES

APPENDIX A: BORING LOGS AND LAB TEST RESULTS

Tel. (800) 535-3577
ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT N. E. ENGINEERS
MIDDLETOWN, R.I.
PROJECT NEW MAINTAINENCE HANGAR
R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	D. BILEZIKIAN	BORING NO.	B-1			
INSPECTOR		SHEET	1			
LINE & STA	OFFSET	OF	1	TYPE	HSA	SS	
SUR.ELEV.		FILE NO.	01014	SIZE ID	4.25 IN./3.00 IN.	1.375 IN.	
START	JANUARY 25, 2001			HAMMER WT.	300 LB.	140 LB.	
FINISH	JANUARY 25, 2001			HAMM. FALL	24 IN.	30 IN.	

DEPTH	COL A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0' 6"-2' 6"	17"/24"	5-10	S	Medium		Moist, olive brown FINE TO MEDIUM SAND, trace - little silt, trace
					9-11		Dense	0' 6"	organics
									Dry, tan, FINE TO MEDIUM SAND
5		2	5'-7'	18"/24"	1-2	S	Very	5' 10"	Wet, tan to brown, FINE SAND
					1/12"		Loose		Wet, brown ORGANIC SILT
								6' 10"	
									Wet, olive brown FINE SAND, little silt, trace organics
10		3	10'-12'	16"/24"	33-28	S	Dense		Wet, gray-brown FINE TO COARSE SAND, little fine gravel, trace
					11-9				silt and angular rock fragments (poss. fill)
15	14	4	15'-17'	16"/24"	4-4	S	Loose	16' 6"	Wet, gray-brown FINE SAND, trace fine to coarse gravel
	21				4-3				Wet, brown MEDIUM SAND, trace coarse sand and fine gravel
	32								NOTE: SWITCHED TO NW CASING AT 18'
	16	5	18'-20'	16"/24"	12-25	S	Dense		Brown, FINE SAND, little medium sand, trace coarse sand, silt
20	18				16-18				and shell fragments
	23								
	47								
	46								
	48	6	23'-25'	18"/24"	28-31	S	Very		Gray, FINE SAND, trace - little silt
25	34				33-27		Dense		
	49								
	57								
	75								
	65	7	28-'30'	14"/24"	23-28	S	Very		Gray-brown FINE SAND, trace silt
30	80				41-49		Dense		
	104								
	70								
	98								
	103	8	33'-35'	17"/24"	15-19	S	Dense		Gray, FINE SAND, trace - little silt
35	85				17-25				
	98								
	113								
	109								
		9	38'-38'2"	1"/2"	100/2"	S	Spoon	38' 2"	Poor Recovery (rock fragments)
40							Refusal		END OF BORING AT 38' 2"

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35%
and 35-50%

GROUNDWATER OBSERVATIONS

AT 7 ft. AFTER 0 HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

Tel. (800) 535-3577
ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT N. E. ENGINEERS
MIDDLETOWN, R.I.
PROJECT NEW MAINTAINENCE HANGAR
R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	D. BILEZIKIAN	BORING NO.	B-2			
INSPECTOR		SHEET	1	TYPE	HSA	SS	
LINE & STA	OFFSET	OF	1	SIZE ID	4.25 IN./3.00 IN.	1.375 IN.	
SUR.ELEV.		FILE NO.	01014	HAMMER WT.	300 LB.	140 LB.	
START	JANUARY 26, 2001			HAMM. FALL	24 IN.	30 IN.	
FINISH	JANUARY 26, 2001						

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0'-2'	22"/24"	29-17	S	Dense		Dry, dark brown, silty, FINE TO COARSE SAND, some organics
					22-17			1' 4"	(frost to 10")
									Light gray, FINE TO COARSE SAND
5		2	5'-7'	12"/24"	3-4	S	Loose		Moist, gray FINE TO MEDIUM SAND, trace coarse sand and fine
					2-2				to medium gravel
10		3	10'-12'	22"/24"	2-2	S	Very	11'	Wet, gray FINE TO MEDIUM SAND
					2-2		Loose		Dark brown, fibrous PEAT
15		4	15'-17'	24"/24"	5-10	S	Medium		Gray, FINE TO MEDIUM SAND, trace coarse sand
					14-14		Dense		NOTE: Swtiched to NW casing at 18'
	3	5	18'-20'	16"/24"	11-16	S	Dense		Gray FINE SAND, little medium sand
20	10				18-22				
	25								
	30								
	35								
	15	6	23'-25'	14"/24"	19-22	S	Dense		Gray-brown FINE TO MEDIUM SAND, trace-little coarse sand
25	22				25-32				and fine gravel
	40								
	60								
	86								
	31	7	28-'30'	18"/24"	15-25	S	Dense	29' 6"	Gray-brown, FINE TO MEDIUM SAND, trace-little coarse sand
30	20				23-26				Brown, MEDIUM SAND, trace-little coarse sand and fine gravel
	36								
	71								
	75								
	35	8	33'-35'	15"/24"	12-12	S	Medium		Gray, FINE SAND, trace - little silt
35	36				11-11		Dense		
	45								
	33								
	33								
		9	38'-40"'	15"/24"	7-9	S	Medium		Gray, FINE SAND, little - some silt
40					7-9		Dense	40'	END OF BORING AT 40'

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35% and 35-50%

GROUNDWATER OBSERVATIONS

AT	9 ft.	AFTER	0 HRS
AT		AFTER	HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

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ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	D. BILEZIKIAN	BORING NO.	B-3			
INSPECTOR		SHEET	1	TYPE	SS	
LINE & STA	OFFSET	OF	2	SIZE ID	1.375 IN.	
SUR.ELEV.		FILE NO.	01014	HAMMER WT.	140 LB.	
START	JANUARY 25, 2001			HAMM. FALL	30 IN.	
FINISH	JANUARY 26, 2001					

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0'6"-2'6"	14"/24"	11-15	S	Medium	1' 6"	Dry, brown FINE TO COARSE SAND, trace fine gravel (FILL)
					13-14		Dense		Dry, tan FINE SAND, little medium to coarse sand (FILL)
5		2	5'-7'	13"/24"	5-4	S	Loose		Wet, tan, FINE TO MEDIUM SAND
					4-4				
10		3	10'-12'	12"/24"	3-2	S	Very		Wet, light brown, FINE SAND, trace silt, trace coarse gravel
					2-4		Loose		
15		4	15'-17'	20"/24"	10-15	S	Medium		Wet, gray-brown FINE SAND, trace medium to coarse sand trace-little silt
					12-14		Dense		
									NOTE: SWITCHED TO NW CASING AT 18'
		5	18'-20'	0"/24"	12-15	S	Dense		No Recovery (gray fine sand in wash)
20					15-18				
		6	23'-25'	16"/24"	8-9	S	Medium		Dark gray, FINE SAND, little-some silt
25					14-23		Dense		
		7	28'-30'	7"/24"	14-12	S	Medium		Dark gray, SILT, little fine sand
30					11-12		Dense		
		8	33'-35'	14"/24"	15-25	S	Very		Gray, FINE SAND, trace silt
35					25-29		Dense		
		9	38'-40'	18"/24"	18-22	S	Very		Gray-brown, FINE SAND, some silt
40					29-32		Dense	40'	END OF BORING AT 40'

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A
PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35%
and 35-50%

GROUNDWATER OBSERVATIONS
AT 6 ft AFTER 0 HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

Tel. (800) 535-3577
ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-4			
INSPECTOR	M. PONTE	SHEET	1			
LINE & STA	OFFSET	OF	2	TYPE	HSA/NW	SS	
SUR.ELEV.		FILE NO.	01014	SIZE ID	4.25 IN./3.00 IN.	1.375 IN.	
START	FEBRUARY 1, 2001			HAMMER WT.	300 LB.	140 LB.	
FINISH	FEBRUARY 1, 2001			HAMM. FALL	24 IN.	30 IN.	

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0'-2'	7"/24"	31-9	S	Medium		Moist, dark brown silty FINE SAND, some medium to coarse
					3-3		Dense		gravel, little-some organics (FILL)
5		2	5'-7'	9"/24"	5-9	S	Medium	5'-7'	Wet, olive-gray FINE SAND, little medium to coarse sand (FILL)
					13-12		Dense		
10		3	10'-12'	22"/24"	2-2	S	Very	10'-12'	Moist, greenish-gray FINE SAND AND SILT, some organics (FILL)
					2-4		Loose		
15		4	15'-17'	14"/24"	5-5	S	Medium	15'-17'	Wet, greenish-gray FINE SAND, little silt
					5-5		Dense		NOTE: Switched to NW casing at 18'
		5	18'-20'	17"/24"	11-11	S	Medium	18'-20'	Wet, greenish-gray FINE SAND, little silt
20					14-18		Dense		
		6	23'-25'	8"/24"	10-11	S	Medium	23'-25'	Wet, greenish-gray FINE SAND, little silt, trace coarse sand
25					11-11		Dense		
		7	28'-30'	14"/24"	9-8	S	Medium	28'-30'	Wet, greenish-gray FINE TO MEDIUM SAND, trace coarse sand
30					9-11		Dense		
		8	33'-35'	16"/24"	5-6	S	Medium	33'-35'	Wet, greenish-gray FINE TO MEDIUM SAND, trace-little coarse sand
35					11-11		Dense		
		9	38'-40'	9"/24"	11-20	S	Dense	38'-40'	Wet, brown FINE TO MEDIUM SAND, little coarse sand and fine
40					23-22				to medium gravel

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35%
and 35-50%

GROUNDWATER OBSERVATIONS

AT 6 ft. AFTER 0 HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

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ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-4			
INSPECTOR	M. PONTE	SHEET	2	TYPE	HSA/NW	SS	
LINE & STA	OFFSET	OF	2	SIZE ID	4.25 IN./3.00 IN	1.375 IN.	
SUR.ELEV.		FILE NO.	01014	HAMMER WT.	300 LB.	140 LB.	
START	FEBRUARY 1, 2001			HAMM. FALL	24 IN.	30 IN.	
FINISH	FEBRUARY 1, 2003						

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		10	43'-45'	8"/24"	6-10	S	Medium		Wet, gray-brown, FINE SAND, little-some silt
45					12-14		Dense		
		11	48'-48' 3"	2"/3"	140/3"	S	Spoon	48' 3"	Wet, dark gray SHALE FRAGMENTS
50							Refusal		END OF BORING AT 48' 3"

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	Med. Stiff
30 - 49	Very Dense	9-15	Stiff
50+	Very Dense	16-30	Very Stiff
		31+	Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35% and 35-50%

GROUNDWATER OBSERVATIONS

AT _____ AFTER _____ HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

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ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-5			
INSPECTOR	M. PONTE	SHEET	1	TYPE	SS	
LINE & STA	OFFSET	OF	1	SIZE ID	1.375 IN.	
SUR.ELEV.		FILE NO.	01014	HAMMER WT.	140 LB.	
START	FEBRUARY 1, 2001			HAMM. FALL	30 IN.	
FINISH	FEBRUARY 1, 2001					

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0-2	17"/24"	6-7	S	Medium		Moist, brown, silty FINE TO COARSE SAND AND GRAVEL
					8-10		Dense		
5		2	5-7	20"/24"	1-1	S	Very		Wet, olive brown FINE SAND, some silt, trace coarse sand
					1-1		Loose		
10		3	10-12	8"/24"	5-4	S	Loose		Wet, brown, FINE TO MEDIUM SAND, some silt
					1-1				
15		4	15-17	8"/24"	1-1	S	Medium		Wet, brown, FINE TO COARSE SAND
					20-28		Dense		
20								20'	End of boring at 20'

SAMPLE IDENTIFICATION
S - SPLIT SPOON
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U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35%
and 35-50%

GROUNDWATER OBSERVATIONS

AT 6 ft. AFTER 0 HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

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BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

DRILLER	C. SETTE	BORING NO.	B-6
INSPECTOR	M. PONTE	SHEET	1
LINE & STA	OFFSET	OF	2
SUR.ELEV.		FILE NO.	01014
START	FEBRUARY 2, 2001		
FINISH	FEBRUARY 2, 2001		

	CASING	SAMPLER	CORE BARREL
TYPE	HSA/NW	SS	
SIZE ID	4.25 IN./3.00 IN.	1.375 IN.	
HAMMER WT.	300 LB.	140 LB.	
HAMM. FALL	24 IN.	30 IN.	

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0'-2'	14"/24"	5-11	S	Medium		Dry, dark-brown, silty FINE TO MEDIUM SAND, trace corase sand and
					10-8		Dense		organics (FILL)
5		2	5'-7'	13"/24"	6-14	S	Dense		Dry brown, FINE TO COARSE SAND
					18-15				
10		3	10'-12'	7"/24"	8-12	S	Dense		Wet, olive brown, FINE TO COARSE SAND
					20-27				
15		4	15'-17'	20"/24"	11-5	S	Medium		Greenish-gray FINE TO MEDIUM SAND
					7-17		Dense		NOTE: Switched to NW casing at 18'
		5	18'-20'	18"/24"	15-15	S	Dense		Greenish-gray FINE SAND, little-some silt
20					20-21				
		6	23'-25'	7"/24"	18-20	S	Dense		Greenish-gray FINE SAND, little-some silt
25					20-19				
		7	28'-30'	9"/24"	7-9	S	Medium		Greenish-gray FINE SAND, little silt
30					11-13		Dense		
		8	33'-35'	14"/24"	22-23	S	Dense		Gray-brown FINE SAND AND SILT
35					25-39				
		9	38'-40'	13"/24"	15-24	S	Very		Greenish-gray FINE SAND, little-some silt
40					30-36		Dense		

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35%
and 35-50%

GROUNDWATER OBSERVATIONS

AT 7 ft. AFTER 0 HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

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ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-6			
INSPECTOR	M. PONTE	SHEET	2	TYPE	HSA/NW	SS	
LINE & STA	OFFSET	OF	2	SIZE ID	4.25 IN./3.00 IN.	1.375 IN.	
SUR.ELEV.		FILE		HAMMER WT.	300 LB.	140 LB.	
START	FEBRUARY 2, 2001	NO.	01014	HAMM. FALL	24 IN.	30 IN.	
FINISH	FEBRUARY 2, 2001						

DEPTH	COL. A	SAMPLE NO.	SAMPLE DEPTH RANGE FEET	SAMPLE REC / PEN	SAMPLE BLOWS/6" ON SAMPLER	SAMPLE TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		10	43'-45'	7"/24"	21-25	S	Very		Wet, dark-gray, SILT, little fine sand
45					30-30		Dense		
		11	48'-50'	0"/24"	19-22	S	Dense		No recovery
50					26-23			50'	END OF BORING AT 50'

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35% and 35-50%

GROUNDWATER OBSERVATIONS
AT _____ AFTER _____ HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

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ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-7			
INSPECTOR	M. PONTE	SHEET	1	TYPE	HSA/NW	SS	
LINE & STA	OFFSET	OF	2	SIZE ID	4.25 IN./3.00 IN.	1.375 IN.	
SUR.ELEV.		FILE		HAMMER WT.	300 LB.	140 LB.	
START	FEBRUARY 2, 2001	NO.	01014	HAMM. FALL	24 IN.	30 IN.	
FINISH	FEBRUARY 5, 2001						

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0'-2'	14"/24"	8-8	S	Medium		Dry, greenish-brown FINE TO MEDIUM SAND, trace fine to medium
					20-22		Dense		gravel and bituminous concrete (FILL)
5		2	5'-7'	11"/24"	5-9	S	Medium		Wet, greenish-gray FINE TO MEDIUM SAND, trace coarse sand
					9-8		Dense		(FILL)
10		3	10'-12'	24"/24"	1-1	S	Very		Dry, dark brown PEAT
					1-5		Loose		
15		4	15'-17'	24"/24"	2-2	S	Very		Wet, greenish-gray FINE TO MEDIUM SAND, little - some silt
					2-5		Loose		NOTE: Switched to NW casing at 18'
		5	18'-20'	10"/24"	10-10	S	Medium		Wet, greenish-gray FINE SAND, some silt
20					11-13		Dense		
		6	23'-25'	11"/24"	10-10	S	Medium		Wet, greenish-gray FINE TO MEDIUM SAND, little-some silt
25					9-8		Dense		
		7	28'-30'	13"/24"	8-7	S	Medium		Wet, greenish-gray FINE SAND, some silt
30					18-26		Dense		
		8	33'-35'	12"/24"	6-8	S	Medium		Wet, olive-brown FINE SAND, some silt
35					10-11		Dense		
		9	38'-40'	2"/24"	20-20	S	Very		Wet, olive-brown FINE SAND, some silt
40					33-20		Dense		

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35%
and 35-50%

GROUNDWATER OBSERVATIONS

AT 6 ft. AFTER 0 HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

Tel. (800) 535-3577
ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

DRILLER	C. SETTE	BORING NO.	B-7
INSPECTOR	M. PONTE	SHEET	2
LINE & STA	OFFSET	OF	2
SUR.ELEV.		FILE NO.	01014
START	FEBRUARY 2, 2001		
FINISH	FEBRUARY 5, 2001		

	CASING	SAMPLER	CORE BARREL
TYPE	HSA/NW	SS	
SIZE ID	4.25 IN./3.00 IN.	1.375 IN.	
HAMMER WT.	300 LB.	140 LB.	
HAMM. FALL	24 IN.	30 IN.	

DEPTH	COL A	SAMPLE NO.	SAMPLE DEPTH RANGE FEET	SAMPLE REC / PEN	BLOWS/6" ON SAMPLER	SAMPLE TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		10	20"/24"	43'-45'	14-8	S	Medium		Wet, brown, FINE TO MEDIUM SAND, trace coarse sand
45					10-18		Dense		
		11	1"/24"	48'-48'1"	140/1"	S	Spoon	48' 1"	Wet, gray FINE SAND, some silt
50							Refusal		END OF BORING AT 48" 1"

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35% and 35-50%

GROUNDWATER OBSERVATIONS
AT 6 FT. AFTER 0 HRS
AT ____ AFTER ____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

Tel. (800) 535-3577
ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-8			
INSPECTOR	M. PONTE	SHEET	1			
LINE & STA	OFFSET	OF	2	TYPE	HSA/NW	SS	
SUR.ELEV.		FILE NO.	01014	SIZE ID	4.25 IN./3.00 IN.	1.375 IN.	
START	FEBRUARY 5, 2001			HAMMER WT.	300 LB.	140 LB.	
FINISH	FEBRUARY 6, 2001			HAMM. FALL	24 IN.	30 IN.	

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0'-2'	13"/24"	6-12	S	Medium		Dry, brown, silty FINE TO COARSE SAND, little fine to medium
					6-6		Dense		gravel (FILL)
5		2	5'-7'	17"/24"	4-5	S	Loose		Wet, greenish-brown FINE SAND AND SILT (FILL)
					3-4				
10		3	10'-12'	20"/24"	1-2	S	Loose		Moist, dark-brown PEAT
					3-4				
15		4	15'-17'	9"/24"	3-3	S	Loose		Wet, olive-brown FINE SAND, some silt
					5-4				NOTE: Switched to NW casing at 18'
		5	18'-20'	20"/24"	8-10	S	Medium		Wet, greenish-gray FINE SAND, little silt
20					10-18		Dense		
		6	23'-25'	7"/24"	17-17	S	Dense		Wet, olive-brown FINE SAND, little-some coarse sand and fine to
25					20-25				medium gravel, trace-little silt
		7	28'-30'	8"/24"	6-10	S	Medium		Wet, olive-brown FINE TO COARSE SAND, trace-little fine gravel,
30					9-11		Dense		trace silt
		8	33'-35'	8"/24"	10-9	S	Medium		Wet, greenish-gray FINE SAND, some silt
35					7-10		Dense		
		9	38'-40'	11"/24"	9-24	S	Very		Wet, gray FINE TO COARSE SAND, some silt, trace-little fine
40					58-120		Dense		gravel

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35%
and 35-50%

GROUNDWATER OBSERVATIONS

AT 6 ft. AFTER 0 HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

Tel. (800) 535-3577
ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-8			
INSPECTOR	M. PONTE	SHEET	2	TYPE	HSA/NW	SS	
LINE & STA	OFFSET	OF	2	SIZE ID	4.25 IN./3.00 IN.	1.375 IN.	
SUR.ELEV.		FILE		HAMMER WT.	300 LB.	140 LB.	
START	FEBRUARY 5, 2001	NO.	01014	HAMM. FALL	24 IN.	30 IN.	
FINISH	FEBRUARY 6, 2001						

DEPTH	COL. A	SAMPLE NO.	SAMPLE DEPTH RANGE FEET	SAMPLE REC / PEN	SAMPLE BLOWS/6" ON SAMPLER	SAMPLE TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		10	43'-45'	8"/24"	109-74	S	Very		Wet, dark gray GRAVEL AND ROCK FRAGMENTS, some fine to
45					45-58		Dense	45'	coarse sand and silt
									END OF BORING AT 45'
50									

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35% and 35-50%

GROUNDWATER OBSERVATIONS
AT _____ AFTER _____ HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

Tel. (800) 535-3577
ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-9			
INSPECTOR	M. PONTE	SHEET	1	TYPE	HSA/NW	SS	
LINE & STA	OFFSET	OF	2	SIZE ID	4.25 IN./300 IN.	1.375 IN.	
SUR.ELEV.		FILE		HAMMER WT.	300 LB.	140 LB.	
START	FEBRUARY 12, 2001	NO.	01014	HAMM. FALL	24 IN.	30 IN.	
FINISH	FEBRUARY 16, 2001						

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0'-2'	16"/24"	4-8	S	Medium		Dry, tan, FINE SAND, trace silt
					8-13		Dense		
5		2	5'-7'	13"/24"	1-1	S	Very		Wet, greenish-gray FINE SAND, some silt, trace coarse sand
					2-5		Loose		
10		3	10'-12'	18"/24"	1-2	S	Loose		Moist, dark brown PEAT
					3-2				
15		4	15'-17'	9"/24"	4-5	S	Medium		Wet, greenish-gray FINE TO MEDIUM SAND, some silt
					8-6		Dense		NOTE: Switched to NW casing at 18'
		5	18'-20'	16"/24"	2-3	S	Loose		Wet, gray-brown SILT, possible organics
20					5-9				
		6	23'-25'	10"/24"	6-7	S	Medium		Wet, gray-brown FINE SAND AND SILT, trace medium-sand
25					7-8		Dense		
		7	28'-30'	9"/24"	5-7	S	Medium		Wet, gray-brown FINE SAND, little-some silt, trace coarse sand
30					12-12		Dense		
		8	33'-35'	14"/24"	5-14	S	Medium		Wet, gray, FINE TO COARSE SAND AND GRAVEL
35					11-11		Dense		
		9	38'-40'	14"/24"	6-16	S	Medium		Wet, gray-brown FINE TO COARSE SAND, little fine gravel, little silt
40					8-4		Dense		

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35% and 35-50%

GROUNDWATER OBSERVATIONS
AT 6 ft. AFTER 0 HRS
AT _____ AFTER _____ HRS
NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

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ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-9			
INSPECTOR	M. PONTE	SHEET	2	TYPE	HSA/NW	SS	
LINE & STA	OFFSET	OF	2	SIZE ID	4.25 IN./3.00 IN.	1.375 IN.	
SUR.ELEV.		FILE		HAMMER WT.	300 LB.	140 LB.	
START	FEBRUARY 12, 2001	NO.	01014	HAMM. FALL	24 IN.	30 IN.	
FINISH	FEBRUARY 16, 2001						

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		10	43'-45'	18"/24"	3-12	S	Dense		Wet, gray, SILT, little fine sand
45					18-21				
		11	48'-50'	16"/24"	12-26	S	Very		Wet, gray, SILT
50					32-61		Dense	50'	END OF BORING AT 50'

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35%
and 35-50%

GROUNDWATER OBSERVATIONS

AT 6 ft. AFTER 0 HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

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125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

DRILLER	C. SETTE	BORING NO.	B-10
INSPECTOR	M. PONTE	SHEET	1
LINE & STA	OFFSET	OF	2
SUR.ELEV.		FILE NO.	01014
START	FEBRUARY 16, 2001		
FINISH	FEBRUARY 16, 2001		

	CASING	SAMPLER	CORE BARREL
TYPE	HSA	SS	
SIZE ID	4.25 IN.	1.375 IN.	
HAMMER WT.		140 LB.	
HAMM. FALL		30 IN.	

DEPTH	COL. A	SAMPLE NO.	SAMPLE DEPTH RANGE FEET	SAMPLE REC / PEN	BLOWS/6" ON SAMPLER	SAMPLE TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0'-2'	22"/24"	6-12	S	Medium		Dry, tan to brown FINE TO MEDIUM SAND, trace coarse sand
					14-16		Dense		(FILL)
5		2	5'-7'	20"/24"	2-3	S	Loose		Wet, brown, FINE SAND, little to some silt (FILL)
					2-2				
10		3	10'-12'	20"/24"	3-5	S	Medium		Wet, dark brown, FINE SAND, trace silt, organics, roots (FILL)
					9-6		Dense		
15		4	15'-17'	9"/24"	6-7	S	Medium		Wet, brown, FINE TO MEDIUM SAND, little coarse sand and fine
					10-16		Dense		gravel
20		5	20'-22'	24"/24"	15-16	S	Dense		Wet, brown FINE TO COARSE SAND, little - some fine gravel
					30-35				
25		6	25'-27'	8"/24"	10-9	S	Dense		Wet, gray SILT AND FINE SAND
					10-13				
30		7	30'-32'	11"/24"	9-10	S	Medium		Wet, light brown FINE SAND, little-some silt
					18-30		Dense		
35		8	35'-37'	18"/24"	14-25	S	Very		Wet, gray, FINE SAND, some silt
					29-42		Dense		
40									

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35% and 35-50%

GROUNDWATER OBSERVATIONS

AT	6 ft	AFTER	0 HRS
AT		AFTER	HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

Tel. (800) 535-3577
ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

DRILLER	C. SETTE	BORING NO.	B-10
INSPECTOR	M. PONTE	SHEET	2
LINE & STA	OFFSET	OF	2
SUR.ELEV.		FILE NO.	01014
START	FEBRUARY 16, 2001		
FINISH	FEBRUARY 16, 2001		

	CASING	SAMPLER	CORE BARREL
TYPE	HSA	SS	
SIZE ID	4.25 IN.	1.375 IN.	
HAMMER WT.		140 LB.	
HAMM. FALL		30 IN.	

DEPTH	COL. A	SAMPLE NO.	SAMPLE DEPTH RANGE FEET	SAMPLE REC / PEN	SAMPLE BLOWS/6" ON SAMPLER	SAMPLE TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		9	40'-42'	13"/24"	4-6	S	Medium		Wet, gray SILT, some fine sand
					14-17		Dense		
45		10	45'-46'	9"/12"	14-106	S	Very Dense	46'	Wet, gray, SILT END OF BORING AT 46'
50									

SAMPLE IDENTIFICATION
- S - SPLIT SPOON
- T - THIN WALL TUBE
- U - UNDISTURBED PISTON
- O - OPEN END ROD
- W - WASH SAMPLE
- A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
- trace 0-10%
- little 10-20%
- some 20-35% and 35-50%

GROUNDWATER OBSERVATIONS

AT 6 ft. AFTER 0 HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

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ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-11			
INSPECTOR	M. PONTE	SHEET	1	TYPE	SS	
LINE & STA	OFFSET	OF	1	SIZE ID	1.375 IN.	
SUR.ELEV.		FILE NO.	01014	HAMMER WT.	140 LB.	
START	FEBRUARY 12, 2001			HAMM. FALL	30 IN.	
FINISH	FEBRUARY 12, 2001					

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0-2	8"/24"	6-6	S	Loose		Dry, tan to brown FINE TO MEDIUM SAND, trace coarse sand
					3-2				and fine gravel (FILL)
5		2	5-7	9"/24"	4-5	S	Loose		Wet, tan to olive brown FINE TO MEDIUM SAND, trace coarse
					4-5				sand and silt (FILL)
10		3	10-12	24"/24"	3-3	S	Loose		Moist, dark brown, PEAT
					3-3				
15		4	15-17	24"/24"	5-12	S	Medium		Wet, olive brown FINE SAND, trace silt
					12-10		Dense	17'	END OF BORING AT 17'
20									

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35% and 35-50%

GROUNDWATER OBSERVATIONS

AT 6 ft. AFTER 0 HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

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ENVIRO-TECH DRILLING, INC.
125 Tremont Street
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BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-12			
INSPECTOR	M. PONTE	SHEET	1	TYPE	SS	
LINE & STA	OFFSET	OF	1	SIZE ID	1.375 IN.	
SUR.ELEV.		FILE NO.	01014	HAMMER WT.	140 LB.	
START	FEBRUARY 12, 2001			HAMM. FALL	30 IN.	
FINISH	FEBRUARY 12, 2001					

DEPTH	COL A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0-2	18"/24"	5-5	S	Medium		Dry, tan to olive brown FINE TO MEDIUM SAND, trace coarse
					10-12		Dense		sand (FILL)
5		2	5-7	8"/24"	2-3	S	Loose		Wet, tan to brown FINE TO MEDIUM SAND, trace coarse sand
					4-4				(FILL)
10		3	10-12	6"/24"	2-2	S	Very		Moist, brown, PEAT, some fine to coarse sand
					2-2		Loose		
15		4	15-17	7"/24"	4-4	S	Loose		Wet, olive brown FINE TO MEDIUM SAND, trace-little silt
					5-5			17'	END OF BORING AT 17'
20									

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35%
and 35-50%

GROUNDWATER OBSERVATIONS

AT 6 ft. AFTER 0 HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

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BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

					CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-13				
INSPECTOR	M. PONTE	SHEET	1	TYPE	HSA	SS	
LINE & STA	OFFSET	OF	1	SIZE ID	4.25 IN.	1.375 IN.	
SUR.ELEV.		FILE		HAMMER WT.		140 LB.	
START	FEBRUARY 12, 2001	NO.	01014	HAMM. FALL		30 IN.	
FINISH	FEBRUARY 12, 2001						

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0-2	13"/24"	8-12	S	Medium		Dry, brown, FINE TO MEDIUM SAND, trace coarse sand and silt
					15-23		Dense		
5		2	5-7	11"/24"	3-4	S	Medium		Wet, gray-brown FINE SAND, trace silt and coarse sand
					6-6		Dense		
10		3	10-12	24"/24"	2-3	S	Loose		Moist, dark brown PEAT, some fine sand
					4-4				
15		4	15-17	16"/24"	6-9	S	Medium		Wet, gray-brown FINE SAND, some silt
					12-13		Dense	17'	END OF BORING AT 17'
20									

SAMPLE IDENTIFICATION
S - SPLIT SPOON
T - THIN WALL TUBE
U - UNDISTURBED PISTON
O - OPEN END ROD
W - WASH SAMPLE
A - AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35% and 35-50%

GROUNDWATER OBSERVATIONS

AT	6 ft.	AFTER	0 HRS
AT		AFTER	HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

Tel. (800) 535-3577
ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-14			
INSPECTOR	M. PONTE	SHEET	1	TYPE	SS	
LINE & STA	OFFSET	OF	1	SIZE ID	1.375 IN.	
SUR.ELEV.		FILE NO.	01014	HAMMER WT.	140 LB.	
START				HAMM. FALL	30 IN.	
FINISH						

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0'-2'	13"/24"	4-11	S	Dense		Dry, gray-brown, FINE TO MEDIUM SAND, little-some silt, trace-
					20-31				little coarse sand and fine to coarse gravel (FILL)
5		2	5'-7'	22"/24"	3-3	S	Medium		Moist, gray ORGANIC SILT, trace fine sand
					5-2		Stiff		
10		3	10'-12'	23"/24"	1-1	S	Very		Wet, olive brown FINE SAND, some silt, trace - little medium sand
					1-2		Loose		
15		4	15'-16' 6"	14"/24"	12-18	S	Very		Wet, olive-brown FINE TO COARSE SAND AND GRAVEL
					70		Dense	16' 6"	END OF BORING AT 16' 6"
20									

SAMPLE IDENTIFICATION
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PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35%
and 35-50%

GROUNDWATER OBSERVATIONS

AT 6 ft. AFTER 0 HRS
AT ____ AFTER ____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

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125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-15			
INSPECTOR	M. PONTE	SHEET	1	TYPE	SS	
LINE & STA	OFFSET	OF	1	SIZE ID	4.25 IN.	1.375 IN.
SUR.ELEV.		FILE NO.	01014	HAMMER WT.		140 LB.
START	FEBRUARY 12, 2001			HAMM. FALL		30 IN.
FINISH	FEBRUARY 12, 2001					

DEPTH	COL A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0-2	11"/24"	6-10	S	Dense		Dry, brown, FINE TO MEDIUM SAND, trace - little coarse sand and
					17-20				fine gravel (FILL)
5		2	5-7	12"/24"	5-7	S	Medium		Dry, tan, FINE TO MEDIUM SAND
					10-12		Dense		
10		3	10-12	22"/24"	19-45	S	Very		Wet, tan, FINE SAND
					56-62		Dense		
15		4	15-17	24"/24"	4-7	S	Medium		Wet, tan, FINE SAND, little silt
					7-9		Dense	17'	END OF BORING AT 17'
20									

SAMPLE IDENTIFICATION
S - SPLIT SPOON
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O - OPEN END ROD
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PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35% and 35-50%

GROUNDWATER OBSERVATIONS

AT 7 ft. AFTER 0 HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

Tel. (800) 535-3577
ENVIRO-TECH DRILLING, INC.
125 Tremont Street
Rehoboth, MA 02769

BORING / WELL LOG

CLIENT NORTHEAST ENGINEERS
MIDDLETOWN R.I.
PROJECT R.I. AIR NATIONAL GUARD
QUONSET POINT, R.I.

				CASING	SAMPLER	CORE BARREL
DRILLER	C. SETTE	BORING NO.	B-16			
INSPECTOR	M. PONTE	SHEET	1	TYPE	HSA	SS	
LINE & STA	OFFSET	OF	1	SIZE ID	4.25 IN.	1.375 IN.	
SUR. ELEV.		FILE NO.	01014	HAMMER WT.	300 LB.	140 LB.	
START	FEBRUARY 12, 2001			HAMM. FALL	24 IN.	30 IN.	
FINISH	FEBRUARY 12, 2001						

DEPTH	COL. A	SAMPLE NO.	DEPTH RANGE FEET	REC / PEN	BLOWS/6" ON SAMPLER	TYPE	MOISTURE DENSITY OR CONSIST	STRAT. CHANGE FEET	SAMPLE CLASSIFICATION AND REMARKS
		1	0-2	4"/24"	9-24	S	Very		Dry, olive brown, FINE TO MEDIUM SAND, little-some coarse sand
					26-24		Dense		and fine to medium gravel (FILL)
5		2	5-7	8"/24"	8-6	S	Medium		Dry, tan, FINE TO MEDIUM SAND, trace coarse sand
					5-7		Dense		
10		3	10-12	20"/24"	3-4	S	Loose		Wet, tan, FINE SAND, little silt
					3-3				
15		4	15-17	6"/24"	1-1	S	Very		Wet, tan, FINE SAND, little silt
					1-2		Loose	17'	END OF BORING AT 17'
20									

SAMPLE IDENTIFICATION
S - SPLIT SPOON
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PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 Med. Stiff
30 - 49 Very Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

COLUMN A

PROPORTIONS USED
trace 0-10%
little 10-20%
some 20-35%
and 35-50%

GROUNDWATER OBSERVATIONS

AT 7 ft. AFTER 0 HRS
AT _____ AFTER _____ HRS

NOTE: Levels may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken.

NORTHEAST ENGINEERS & CONSULTANTS, Inc.

42 VALLEY ROAD, MIDDLETOWN, RHODE ISLAND 02842 PH.: (401) 849 - 0810 FAX: (401) 846 - 4169

Project: RI Air National Guard — Project Number: 01005.0
Date Sampled: 1/25/01 — Date Tested: 2/28/01
Boring #: B1-S1 — Test #: 1
Calculated By: MDP — Checked By:

PARTICLE-SIZE ANALYSIS: ASTM D-422

Description of soil: fine to med sand — Location: Hanger

Part A: COARSE SIEVE ANALYSIS

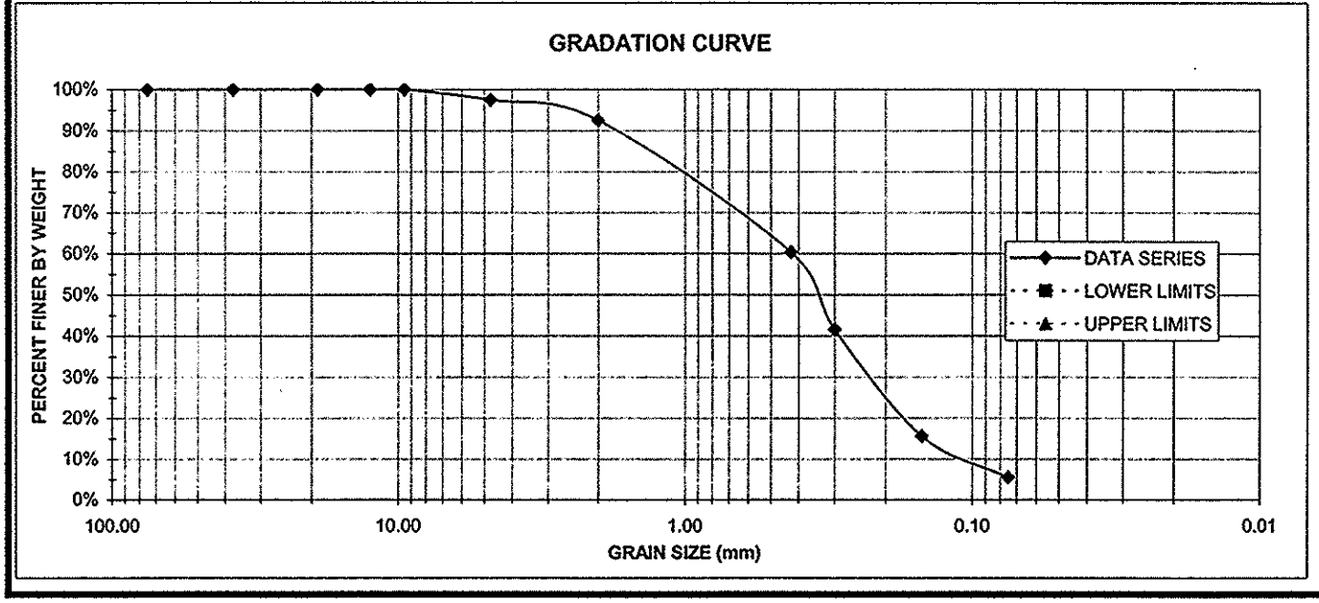
Weight of oven dry sample: 247.1

Sieve	Sieve Open. (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent pass. of whole samp.	Percent ret. of whole samp.
3"	75.00	0	247.10	100.00%	0.00%
1-1/2"	37.50	0.00	247.10	100.00%	0.00%
3/4"	19.00	0.00	247.10	100.00%	0.00%
1/2"	12.50	0.00	247.10	100.00%	0.00%
3/8"	9.50	0.00	247.10	100.00%	0.00%
#4	4.75	6.10	241.00	97.53%	2.47%
#10	2.00	12.20	228.80	92.59%	7.41%
PAN	0.00	228.80			
	TOTAL:	247.10		Loss during testing:	0.00%

Part B: FINE SIEVE ANALYSIS

Weight of oven dry sample: 228.8

Sieve	Sieve Opening (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent Pass. of fine samp.	Percent Pass. of whole samp.	Percent Ret. of whole samp.
#40	0.425	79.20	149.10	65.17%	60.34%	39.66%
#50	0.3	46.40	102.70	44.89%	41.56%	58.44%
#100	0.15	64.10	38.60	16.87%	15.62%	84.38%
#200	0.075	25.00	13.60	5.94%	5.50%	94.50%
PAN	0	13.60				
	TOTAL:	228.30			Loss during testing:	0.22%



NORTHEAST ENGINEERS & CONSULTANTS, Inc.

42 VALLEY ROAD, MIDDLETOWN, RHODE ISLAND 02842 PH.: (401) 849 - 0810 FAX: (401) 846 - 4169

Project: RI Air National Guard — Project Number: 01005.0
Date Sampled: 1/25/01 — Date Tested: 2/28/01
Boring #: B1- S4 — Test #: 1
Calculated By: MDP — Checked By:

PARTICLE-SIZE ANALYSIS: ASTM D-422

Description of soil: fine sand, little silt — Location: Hanger

Part A: COARSE SIEVE ANALYSIS

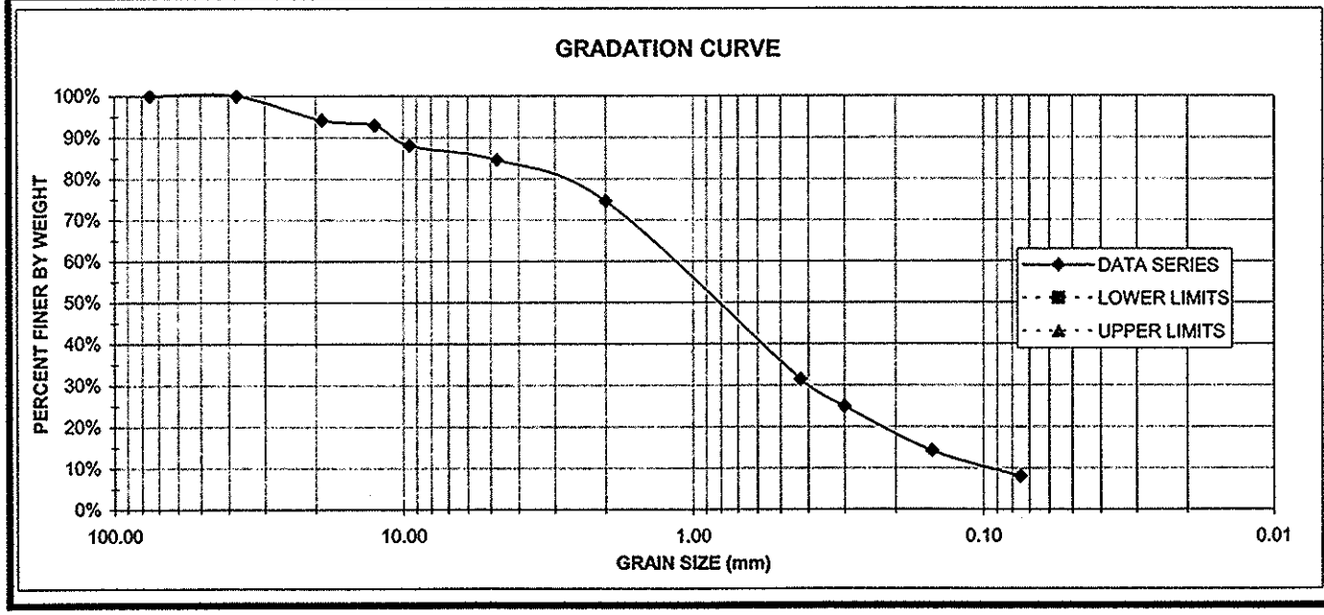
Weight of oven dry sample: 289.9

Sieve	Sieve Open. (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent pass. of whole samp.	Percent ret. of whole samp.
3"	75.00	0	289.90	100.00%	0.00%
1-1/2"	37.50	0.00	289.90	100.00%	0.00%
3/4"	19.00	16.90	273.00	94.17%	5.83%
1/2"	12.50	3.60	269.40	92.93%	7.07%
3/8"	9.50	14.10	255.30	88.06%	11.94%
#4	4.75	9.90	245.40	84.65%	15.35%
#10	2.00	29.20	216.20	74.58%	25.42%
PAN	0.00	217.50			
	TOTAL:	291.20		Loss during testing:	-0.45%

Part B: FINE SIEVE ANALYSIS

Weight of oven dry sample: 217.5

Sieve	Sieve Opening (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent Pass. of fine samp.	Percent Pass. of whole samp.	Percent Ret. of whole samp.
#40	0.425	126.50	91.00	41.84%	31.39%	68.61%
#50	0.3	18.70	72.30	33.24%	24.94%	75.06%
#100	0.15	31.00	41.30	18.99%	14.25%	85.75%
#200	0.075	18.10	23.20	10.67%	8.00%	92.00%
PAN	0	23.20				
	TOTAL:	217.50			Loss during testing:	0.00%



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42 VALLEY ROAD, MIDDLETOWN, RHODE ISLAND 02842 PH.: (401) 849 - 0810 FAX: (401) 846 - 4169

Project: RI Air National Guard — Project Number: 01005.0
Date Sampled: 1/25/01 — Date Tested: 2/28/01
Boring #: B1- S7 — Test #: 1
Calculated By: MDP — Checked By:

PARTICLE-SIZE ANALYSIS: ASTM D-422

Description of soil: fine sand, trace silt — Location: Hanger

Part A: COARSE SIEVE ANALYSIS

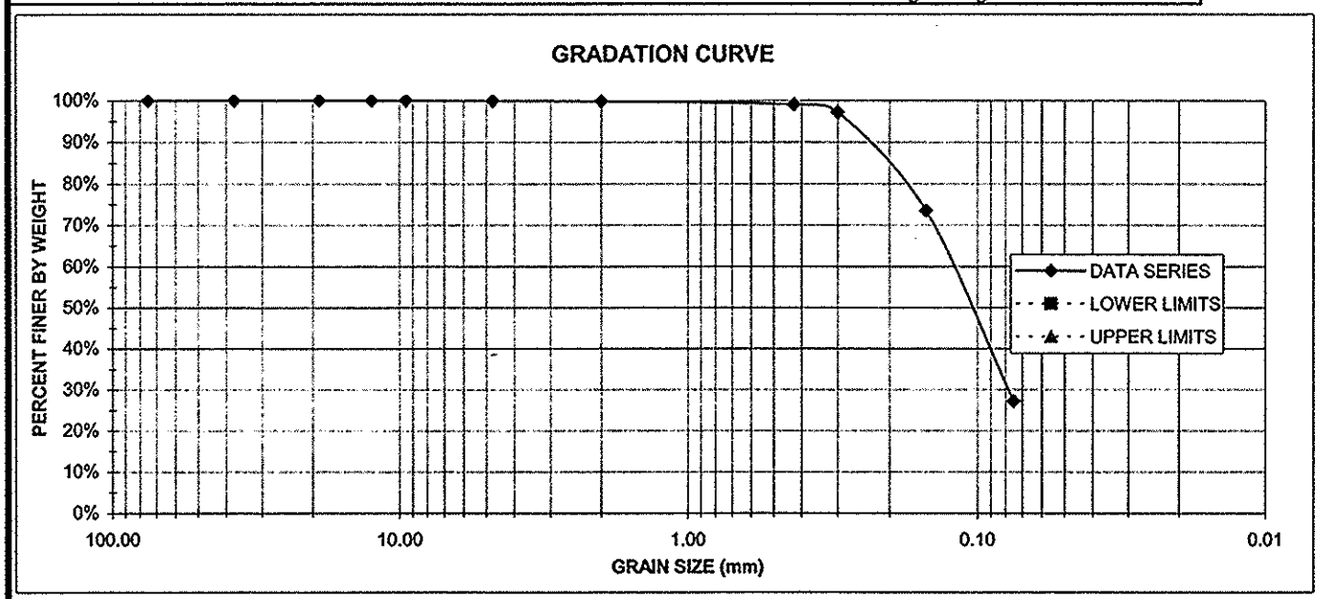
Weight of oven dry sample: 215.4

Sieve	Sieve Open. (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent pass. of whole samp.	Percent ret. of whole samp.
3"	75.00	0	215.40	100.00%	0.00%
1-1/2"	37.50	0.00	215.40	100.00%	0.00%
3/4"	19.00	0.00	215.40	100.00%	0.00%
1/2"	12.50	0.00	215.40	100.00%	0.00%
3/8"	9.50	0.00	215.40	100.00%	0.00%
#4	4.75	0.20	215.20	99.91%	0.09%
#10	2.00	0.20	215.00	99.81%	0.19%
PAN	0.00	215.00			
	TOTAL:	215.40		Loss during testing:	0.00%

Part B: FINE SIEVE ANALYSIS

Weight of oven dry sample: 215.0

Sieve	Sieve Opening (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent Pass. of fine samp.	Percent Pass. of whole samp.	Percent Ret. of whole samp.
#40	0.425	2.10	213.30	99.21%	99.03%	0.97%
#50	0.3	4.00	209.30	97.35%	97.17%	2.83%
#100	0.15	51.00	158.30	73.63%	73.49%	26.51%
#200	0.075	99.70	58.60	27.26%	27.21%	72.79%
PAN	0	58.60				
	TOTAL:	215.40			Loss during testing:	-0.19%



NORTHEAST ENGINEERS & CONSULTANTS, Inc.

42 VALLEY ROAD, MIDDLETOWN, RHODE ISLAND 02842 PH.: (401) 849 - 0810 FAX: (401) 846 - 4169

Project: RI Air National Guard — Project Number: 01005.0
Date Sampled: 2/2/01 — Date Tested: 2/28/01
Boring #: B6-S2 — Test #: 1
Calculated By: MDP — Checked By:

PARTICLE-SIZE ANALYSIS: ASTM D-422

Description of soil: fine to coarse sand — Location: Hanger

Part A: COARSE SIEVE ANALYSIS

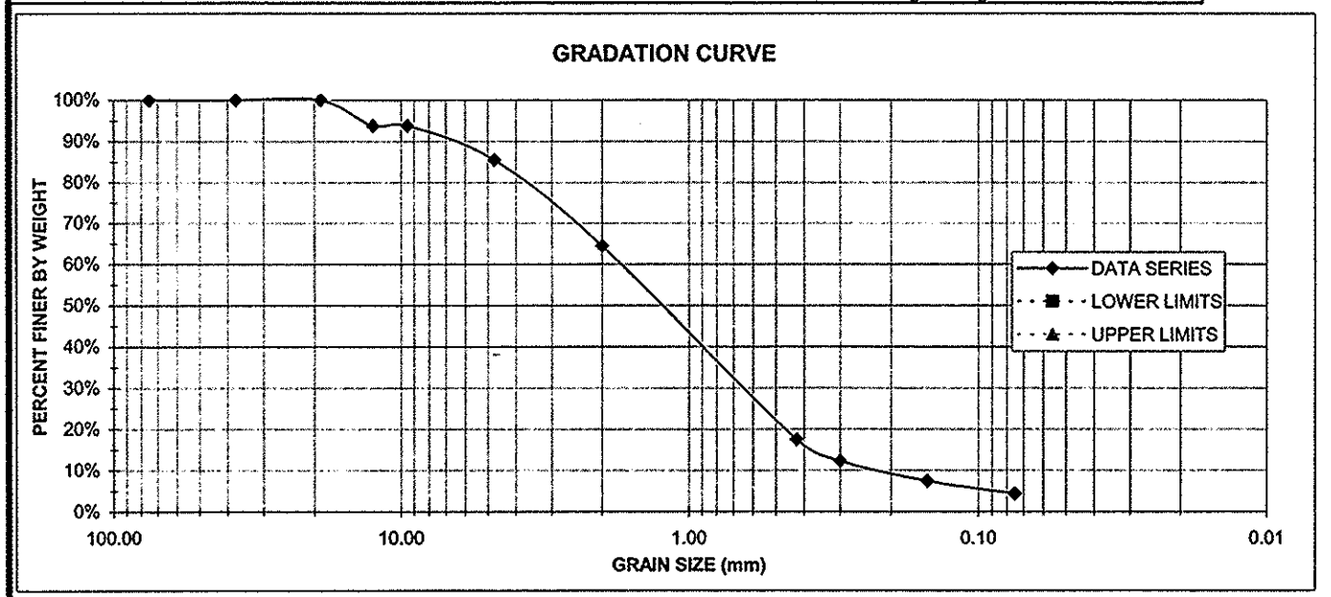
Weight of oven dry sample: 280.2

Sieve	Sieve Open. (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent pass. of whole samp.	Percent ret. of whole samp.
3"	75.00	0	280.20	100.00%	0.00%
1-1/2"	37.50	0.00	280.20	100.00%	0.00%
3/4"	19.00	0.00	280.20	100.00%	0.00%
1/2"	12.50	17.30	262.90	93.83%	6.17%
3/8"	9.50	0.00	262.90	93.83%	6.17%
#4	4.75	23.20	239.70	85.55%	14.45%
#10	2.00	59.20	180.50	64.42%	35.58%
PAN	0.00	180.50			
	TOTAL:	280.20		Loss during testing:	0.00%

Part B: FINE SIEVE ANALYSIS

Weight of oven dry sample: 180.5

Sieve	Sieve Opening (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent Pass. of fine samp.	Percent Pass. of whole samp.	Percent Ret. of whole samp.
#40	0.425	131.40	49.10	27.20%	17.52%	82.48%
#50	0.3	14.80	34.30	19.00%	12.24%	87.76%
#100	0.15	13.60	20.70	11.47%	7.39%	92.61%
#200	0.075	8.60	12.10	6.70%	4.32%	95.68%
PAN	0	12.10				
	TOTAL:	180.50			Loss during testing:	0.00%



NORTHEAST ENGINEERS & CONSULTANTS, Inc.

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Project: RI Air National Guard
Project Number: 01005.0
Date Sampled: 2/2/01
Date Tested: 2/28/01
Boring #: B7- S8
Test #: 1
Calculated By: MDP
Checked By:

PARTICLE-SIZE ANALYSIS: ASTM D-422

Description of soil: fine sand, some silt
Location: Hanger

Part A: COARSE SIEVE ANALYSIS

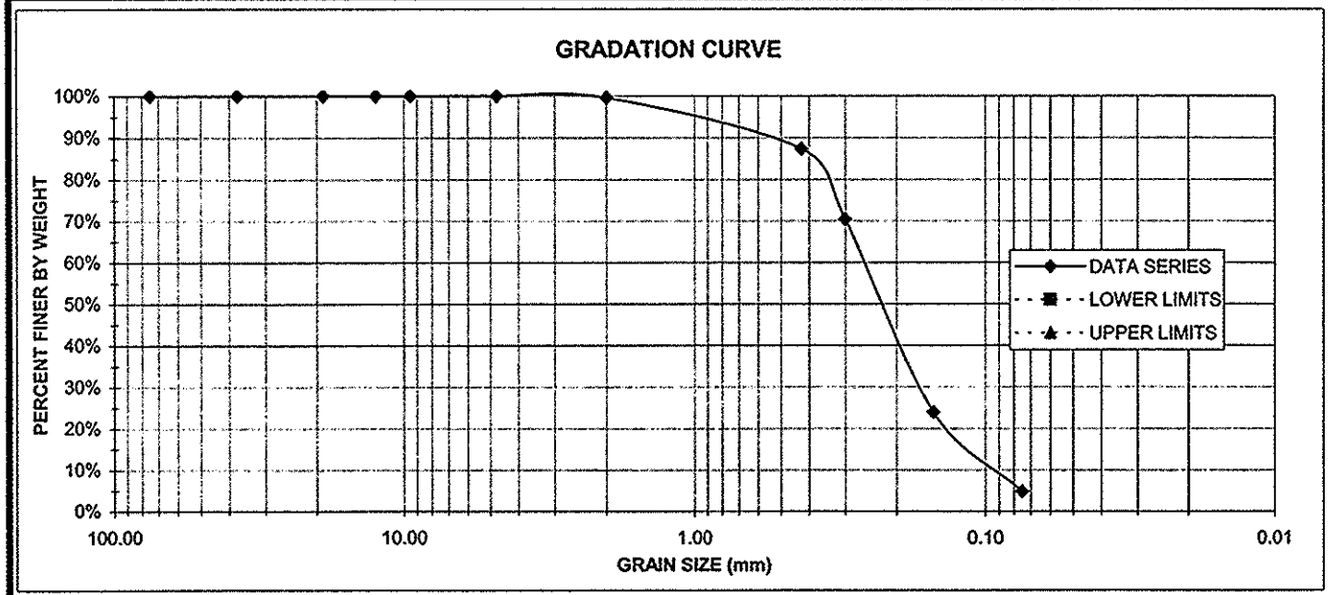
Weight of oven dry sample: 293.4

Sieve	Sieve Open. (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent pass. of whole samp.	Percent ret. of whole samp.
3"	75.00	0	293.40	100.00%	0.00%
1-1/2"	37.50	0.00	293.40	100.00%	0.00%
3/4"	19.00	0.00	293.40	100.00%	0.00%
1/2"	12.50	0.00	293.40	100.00%	0.00%
3/8"	9.50	0.00	293.40	100.00%	0.00%
#4	4.75	0.00	293.40	100.00%	0.00%
#10	2.00	1.20	292.20	99.59%	0.41%
PAN	0.00	292.20			
	TOTAL:	293.40		Loss during testing:	0.00%

Part B: FINE SIEVE ANALYSIS

Weight of oven dry sample: 292.2

Sieve	Sieve Opening (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent Pass. of fine samp.	Percent Pass. of whole samp.	Percent Ret. of whole samp.
#40	0.425	35.70	256.30	87.71%	87.36%	12.64%
#50	0.3	49.70	206.60	70.70%	70.42%	29.58%
#100	0.15	136.20	70.40	24.09%	23.99%	76.01%
#200	0.075	56.20	14.20	4.86%	4.84%	95.16%
PAN	0	14.20				
	TOTAL:	292.00			Loss during testing:	0.07%



NORTHEAST ENGINEERS & CONSULTANTS, Inc.

42 VALLEY ROAD, MIDDLETOWN, RHODE ISLAND 02842 PH.: (401) 849 - 0810 FAX: (401) 846 - 4169

Project: RI Air National Guard
Project Number: 01005.0
Date Sampled: 2/16/01
Date Tested: 2/28/01
Boring #: B9-S6
Test #: 1
Calculated By: MDP
Checked By:

PARTICLE-SIZE ANALYSIS: ASTM D-422

Description of soil: fine sand and silt
Location: Hanger

Part A: COARSE SIEVE ANALYSIS

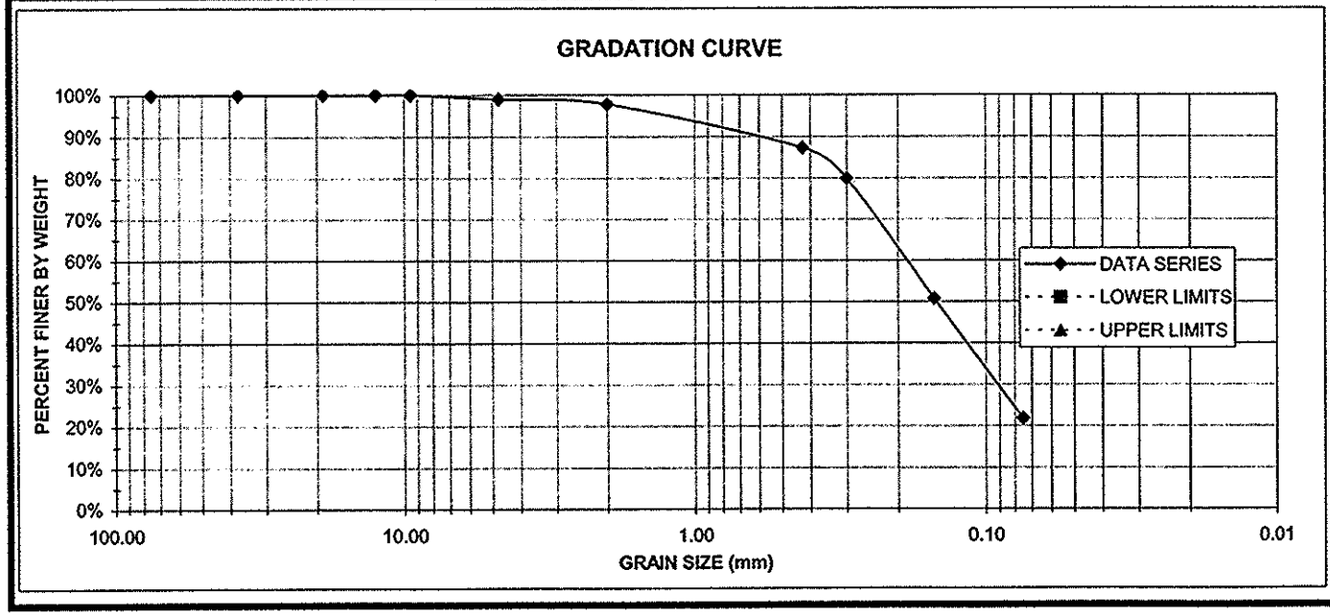
Weight of oven dry sample: 250.1

Sieve	Sieve Open. (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent pass. of whole samp.	Percent ret. of whole samp.
3"	75.00	0	250.10	100.00%	0.00%
1-1/2"	37.50	0.00	250.10	100.00%	0.00%
3/4"	19.00	0.00	250.10	100.00%	0.00%
1/2"	12.50	0.00	250.10	100.00%	0.00%
3/8"	9.50	0.00	250.10	100.00%	0.00%
#4	4.75	2.50	247.60	99.00%	1.00%
#10	2.00	3.10	244.50	97.76%	2.24%
PAN	0.00	245.00			
	TOTAL:	250.60		Loss during testing:	-0.20%

Part B: FINE SIEVE ANALYSIS

Weight of oven dry sample: 245.0

Sieve	Sieve Opening (mm)	Grams Ret. (g)	Grams Pass. (g)	Percent Pass. of fine samp.	Percent Pass. of whole samp.	Percent Ret. of whole samp.
#40	0.425	26.10	218.40	89.14%	87.33%	12.67%
#50	0.3	18.60	199.80	81.55%	79.89%	20.11%
#100	0.15	72.80	127.00	51.84%	50.78%	49.22%
#200	0.075	72.50	54.50	22.24%	21.79%	78.21%
PAN	0	54.50				
	TOTAL:	244.50			Loss during testing:	0.20%



NORTHEAST ENGINEERS & CONSULTANTS, Inc.

42 VALLEY ROAD, MIDDLETOWN, RHODE ISLAND 02842 PH.: (401) 849 - 0810 FAX: (401) 846 - 4169

Project: RI Air National Guard Project Number: 01005.0

Date Sampled: Date Tested:

Sample #: B 13, 0 to 3 feet Test #: 1

Calculated By: MDP Checked By:

MODIFIED PROCTOR COMPACTION - ASTM D-1557

Description of soil: Dark gray silty sand w / gravel Date Sampled:

Location: Proposed parking lot Number of Layers: 5

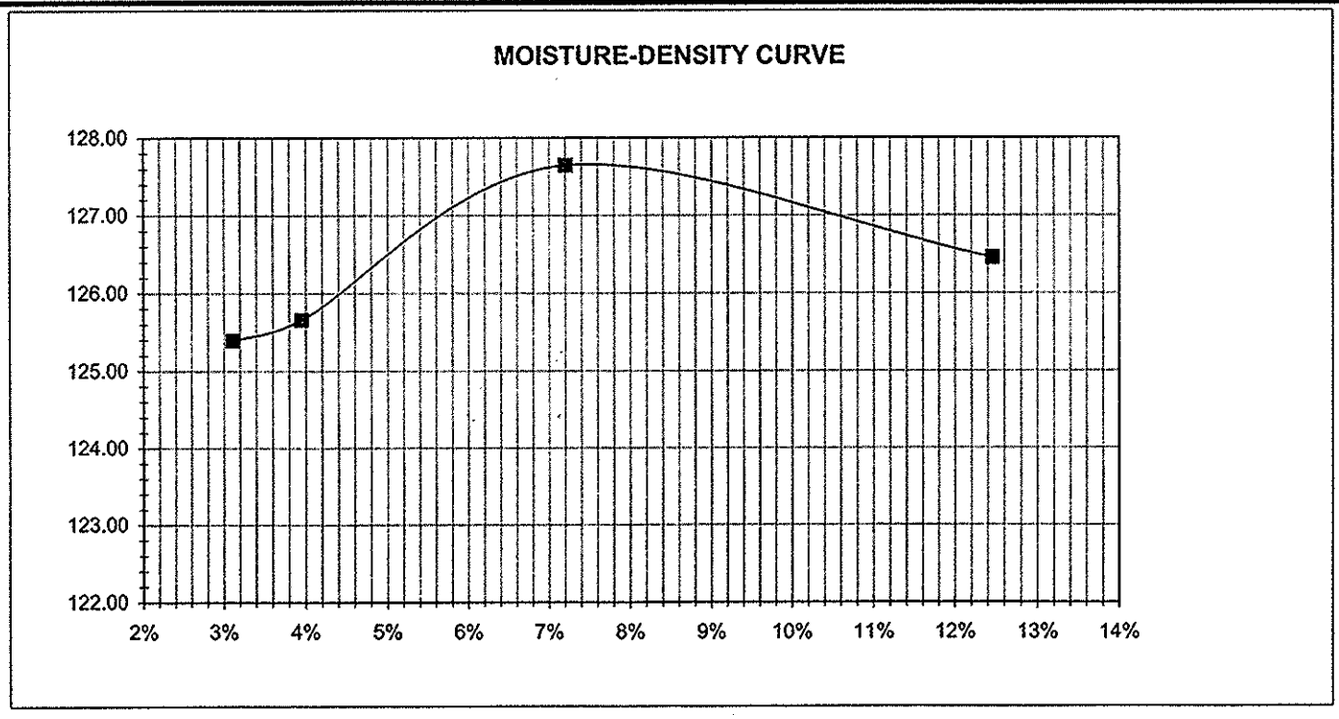
Weight of Hammer: 10 lbf No. of Blows per Layer: 25

Procedure: A

Test #	Weight of Mold, W1 (g)	Weight of mold & moist soil (g)	Weight of moist soil (g)	Moist unit weight, (lb/ft^3)	Moisture Content, (%)	Dry Unit Weight, (lb./ft^3)
1	4,230.00	6,183.00	1,953.00	129.30	3.11%	125.39
2	4,230.00	6,203.00	1,973.00	130.62	3.95%	125.66
3	4,230.00	6,297.00	2,067.00	136.85	7.21%	127.65
4	4,230.00	6,378.00	2,148.00	142.21	12.46%	126.46
5						

MOISTURE CONTENT DETERMINATION

Can Number	1	2	3	4	5
Weight of can, g.	304.50	293.20	305.90	297.30	
Weight of Moist Soil & can, g.	715.00	879.80	857.90	857.00	
Weight of Dry Soil & can, g.	702.60	857.50	820.80	795.00	
Moisture Content, %	3.11%	3.95%	7.21%	12.46%	



CALIFORNIA BEARING RATIO
ASTM D 1883-93

Project : RIANG Hanger
Project No. : 3321
Location : Quonset Point, RI

Test No. : CBR1
Sample No. : Sample 1
Sample Type : Remolded

Test Date : 03/20/01
Tested by : MCH/CCP
Checked by : jdt

Soil Description : Very dark gray silty sand with gravel & organics
Sample Preparation : Compacted to 95% of Max Density @ 8.0% moisture
Remarks : ---

Height : 4.580 (in)
Area : 28.27 (in^2)
Volume : 129.50 (in^3)
Weight : 11487.00 (gm)

Sample was : SOAKED
Piston Friction : 0.00 (lb)
Swell : 0.00%
Surcharge : 4960.00 (gm)

Void Ratio : 0.33
Wet Unit Weight : 131.56 (lb/ft^3)
Dry Unit Weight : 122.39 (lb/ft^3)

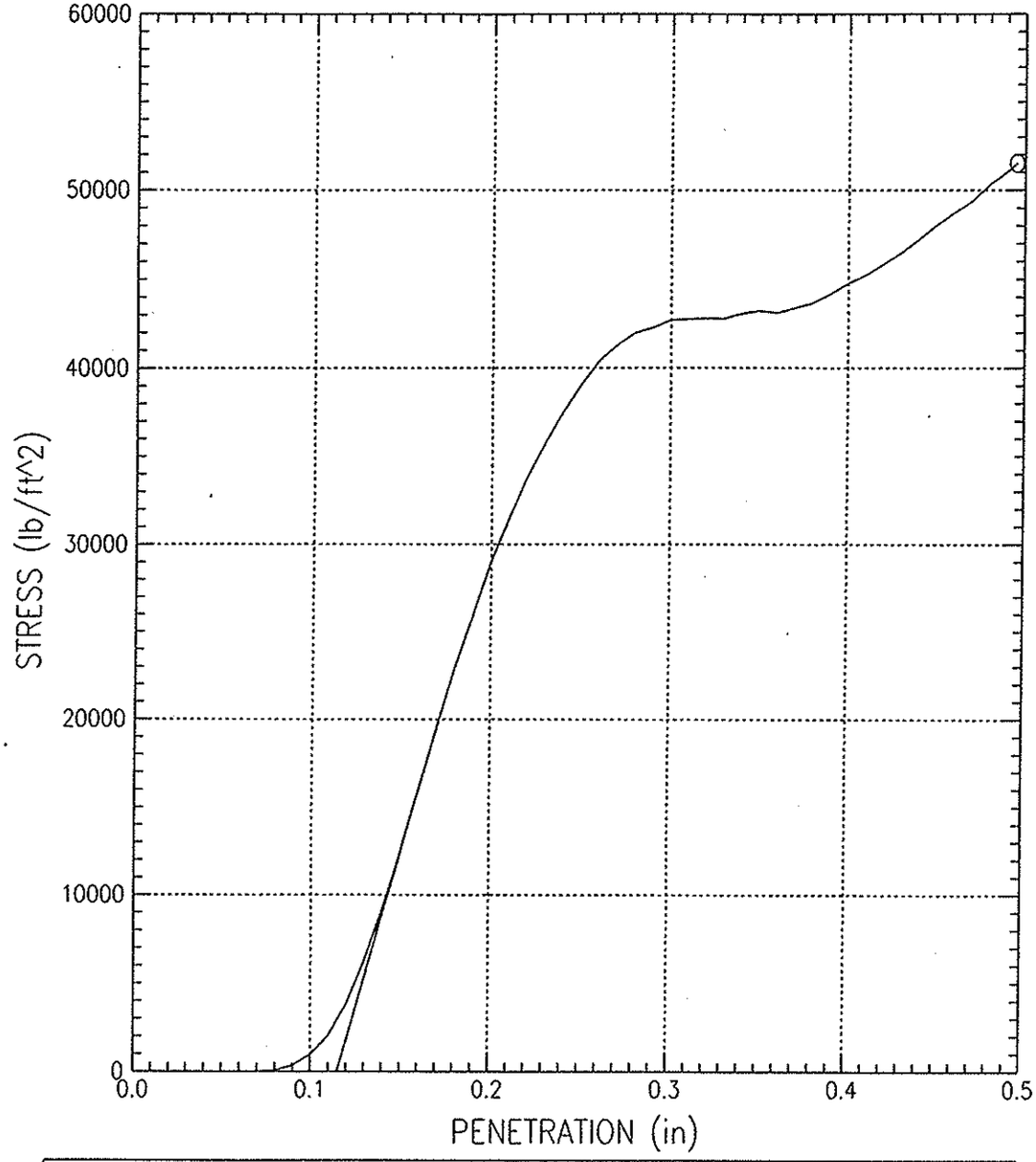
CBR at 0.1 in. : 23
CBR at 0.2 in. : 20
CBR at 0.3 in. : 17
CBR at 0.4 in. : 16
CBR at 0.5 in. : 16

	Initial	After Test	
		top 1"	average
CONTAINER NO.	jgb52	k112	new2
WT CONTAINER + WET SOIL (gm)	307.85	549.10	670.82
WT CONTAINER + DRY SOIL (gm)	287.02	488.86	614.17
WT WATER (gm)	20.83	60.24	56.65
WT CONTAINER (gm)	9.09	8.17	9.67
WT DRY SOIL (gm)	277.93	480.69	604.50
WATER CONTENT (%)	7.49	12.53	9.37

NOTE: ASTM Designation: D 1883 - 93 states that the bearing ratio reported is normally the one at 0.10 in. penetration. When the bearing ratio at 0.20 in. penetration is greater, rerun the test. If the check test gives similar results, use the bearing ratio at 0.20 in. penetration.

Results are reported for penetrations in increments of 0.1 inches. The user of these data should interprete the data to obtain a design value of CBR.

CALIFORNIA BEARING RATIO



Symbol :	O
Project Name :	RIANG Hanger
Project No	3321
Sample No :	Sample 1
Test Date :	03/20/01
Test No :	CBR1
CBR at 0.10 in.:	23

LEGEND

B–15 EXPLORATORY BORING LOCATION

JP8 JET FUEL
2 100,000 GAL TANKS

FUTURE ENGINE SHOP

PHASE 1 MAINTENANCE HANGAR

PHASE 2

FLIGHTLINE DR.

POV PARKING (90 SPACES)

POV PARKING (44 SPACES)

TUG ROUTE

GOV ACCESS

ANG BASE

Asphalt

Concrete

Headwall

L.S.

POLE

CB

DMH

SMH

HOLDING TANK

FLIGHTLINE

GRAPHIC SCALE

50 0 25 50 100 200

(in feet)
1"=50'

S:\PROJECTS\2001\01005\01005_C1.DWG

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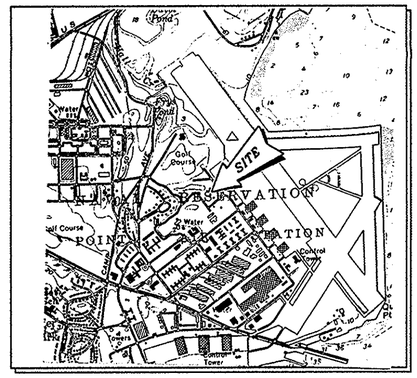

No.	Revision	Date	App.

Designed By: | Drawn by: JJR | Checked by:
Scale: 1"=50' | Date: 22MAR01

Project Title:

RHODE ISLAND NATIONAL GUARD
MAINTENENCE HANGER
QUONSET AIR NATIONAL GUARD BASE
NORTH KINGSTON, RHODE ISLAND

Issued for:

BENHAM GROUP

Drawing Title:

GEOTECHNICAL INVESTIGATION
FIGURE 1
SITE PLAN

Drawing Number: C-1

Sheet 1 of 1

Project Number: 01005.0

Survey Index: – –